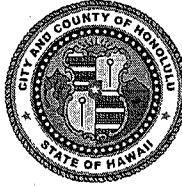


DEPARTMENT OF PLANNING AND PERMITTING  
**CITY AND COUNTY OF HONOLULU**

650 SOUTH KING STREET, 7<sup>TH</sup> FLOOR • HONOLULU, HAWAII 96813  
PHONE: (808) 768-8000 • FAX: (808) 768-6041  
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RICK BLANGIARDI  
MAYOR



DEAN UCHIDA  
DIRECTOR

DAWN TAKEUCHI APUNA  
DEPUTY DIRECTOR

April 27, 2022

2021/ED-14(ST)  
2022/ELOG-724

Ms. Mary Alice Evans, Director  
State of Hawaii  
Office of Planning and Sustainable Development  
Environmental Review Program  
235 South Beretania Street, Room 702  
Honolulu, Hawaii 96813-2437

Dear Ms. Evans:

**SUBJECT:** Chapter 25 Revised Ordinances of Honolulu  
Final Environmental Assessment (FEA)

**Project:** Wheatley Residence  
**Applicants:** Robert M. Wheatley and Sue J. Lee  
**Agent:** Environmental Risk Assessment (Vincent Yanagita)  
**Location:** 4 Lumahai Street - Maunaloa  
**Tax Map Key:** 3-9-013: 032  
**Request:** Special Management Area (SMA) Use Permit  
**Proposal:** To replace an existing dwelling with a new 3,914-square-foot modular dwelling and 569-square-foot garage on a 21,639-square-foot cliff-side shoreline parcel.  
**Determination:** Finding of No Significant Impact (FONSI)

With this letter the Department of Planning and Permitting (DPP) hereby transmits the FEA and FONSI for the subject Project located in the SMA at the above location in the East Honolulu District, on the island of Oahu. No development is proposed within the shoreline setback area. Please publish this finding in the next edition of *The Environmental Notice* on May 8, 2022.

Based on the significance criteria outlined in Title 11, Chapter 200.1, Hawaii Administrative Rules, the DPP has determined that the preparation of an Environmental

Ms. Mary Alice Evans, Director  
April 27, 2022  
Page 2

Impact Statement is not required. The FEA adequately discloses and describes relevant environmental impacts and responds to review comments received.

We have uploaded an electronic copy of this letter, a completed Office of Environmental Quality Control publication form, the FEA and FONSI to your online submittal site.

Should you have any questions, please contact Steve Tagawa, of our Land Use Approvals Branch, at (808) 768-8024 or via email at [stagawa@honolulu.gov](mailto:stagawa@honolulu.gov).

Very truly yours,

A handwritten signature in black ink, appearing to read 'D. Uchida', written in a cursive style.

Dean Uchida  
Director

**NON-CHAPTER 343 DOCUMENT  
PUBLICATION FORM  
OFFICE OF ENVIRONMENTAL QUALITY CONTROL**

**Project Name:** Wheatley Residence

**Applicable Law:** Chapter 25, Revised Ordinances of Honolulu

**Type of Document:** Draft Environmental Assessment

**Island:** Oahu

**District:** Honolulu (Judicial District)

**TMK:** (1) 3-1-013: 032

**Permits Required:** Special Management Area (SMA) Use Permit, grading, building, National Pollutant Discharge Elimination System, Underground Injection Control permits.

**Applicant or Proposing Agency:** Mr. Robert M. Wheatley and Ms. Sue J. Lee

**Approving Agency or Accepting Authority:** Department of Planning and Permitting  
City and County of Honolulu  
650 South King Street, 7<sup>th</sup> Floor  
Honolulu, Hawaii 96813  
Steve Tagawa  
(808)768-8024  
stagawa@honolulu.gov

**Consultant:** Environmental Risk Analysis LLC (Vincent Yanagita)  
905-A Makahiki Way,  
Honolulu, Hawaii 96826  
(808) 397-0480  
vincentyanagita@envioriskhawaii.com

**Status:** *Finding of No Significant Impact*

**Project Summary:** The demolition of an existing single-family residence located at 4 Lumahai Street in East Honolulu and the construction of a new 3,914 square-foot, two-story modular residence and a 524-square-foot garage on a 21,0639-square-foot cliff-side shoreline parcel in the SMA. The irregularly shaped rocky parcel slopes steeply downward from the street, with an elevation that ranges from 141 to 30 feet above mean sea level. The site is adjacent to the 10-foot-wide public shoreline access to the "Spitting Caves" which are located immediately below the site. The lower 3,500-square-foot portion of the parcel is designated as a public access easement and a 1,466-square-foot portion of the parcel has been lost to erosion.

The construction of the dwelling requires approval of a SMA Use Permit from the Honolulu City Council.



**FINAL**  
**ENVIRONMENTAL ASSESSMENT**

**4 Lumahai Street  
Honolulu, Hawaii 96825  
Tax Map Key 3-9-013:32**

**Applicant:**

Mr. Robert M Wheatley  
Ms. Sue J. Lee

**Approving Agency:**

City and County of Honolulu  
Department of Planning and Permitting

April 2022



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**FINAL**  
**ENVIRONMENTAL ASSESSMENT**

**4 Lumahai Street  
Honolulu, Hawaii 96825  
Tax Map Key 3-9-013:32**

**Prepared by:**  
Environmental Risk Analysis LLC  
905A Makahiki Way  
Honolulu, Hawaii 96826

**Prepared for:**  
Mr. Robert M. Wheatley  
Ms. Sue J. Lee  
4 Lumahai Street  
Honolulu, Hawaii 96825

**Applicant:**  
Mr. Robert M. Wheatley  
Ms. Sue J. Lee

**Approving Agency:**  
City and County of Honolulu  
Department of Planning and Permitting  
650 South King Street  
Honolulu, Hawaii 96813

April 2022

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## *Acronyms and Abbreviations*

BMPs	Best Management Practices
BWS	Board of Water Supply
CDP	Census Designated Place
Census	U.S. Census Bureau
CFR	Code of Federal Regulations
Cl <sup>-</sup>	chloride
dBA	decibels
EA	Environmental Assessment
EAL	Environmental Action Level
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
FEMA	Federal Emergency Response Agency
FIRM	Flood Insurance Rate Map
FONSI	Finding of No Significant Impact
HAR	Hawaii Administrative Rules
HICRIS	Hawaii Cultural Resource Information System
HDOH	Hawaii State Department of Health
HDOT	Hawaii Department of Transportation
HEER	Hazard Evaluation and Emergency Response
HFD	Honolulu Fire Department
HPD	Honolulu Police Department
HRS	Hawaii Revised Statutes
LUCs	Land Use Commission
LUO	Land Use Ordinance
mg/l	milligrams per liter
NAAQS	National Ambient Air Quality Standards
NPDES	National Pollutant Discharge Elimination System
PM <sub>2.5</sub>	particulate matter at 2.5 microns or less
ROH	Revised Ordinances of Honolulu
SEL	sound exposure levels
SF	square feet
SHPD	Hawaii State Historic Preservation
TMK	tax map key
UH	University of Hawaii at Manoa
UIC	Underground Injection Control
USDA	United States Department of Agriculture
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey



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## Executive Summary

This Environmental Assessment (EA) was conducted to assess potential environmental impacts associated with the demolition of an existing structure and construction of two 2-story single family residences on property known as Tax Map Key (TMK) 3-9-013:32 in Honolulu, Hawaii on the island of Oahu. The EA was prepared to identify, document and address potential environmental impacts associated with the Proposed Action. This EA is prepared pursuant to the Special Management Area (SMA) Ordinance, Chapter 25, Revised Ordinances of Honolulu (ROH) which requires that an EA be prepared for an SMA Use Permit in accordance to the procedural steps set forth in State Environmental Impact Statement (EIS) law, Chapter 343, Hawaii Revised Statutes (HRS).

The EA examines two alternatives, the Proposed Action, and the No Action Alternative.

- Alternative I – No Action Alternative
- Alternative II – The Proposed Action – demolition of an existing residence and construction of a two (2)-story single family residence.

The following potentially impacted environments were evaluated in this EA:

- Topography and Geology
- Soils
- Natural Hazard
- Flora and Fauna
- Water Resources
- Climate and Air Quality
- Noise
- Solid Wastes
- Land Use Considerations and Zoning
- Archaeological and Cultural Considerations
- Circulation and Traffic
- Social Factors and Community Identity
- Economic Considerations
- Recreational and Public Facilities
- Visual and Aesthetic Resources
- Infrastructure Systems and Utilities

## Findings

- A Finding of No Significant Impact (FONSI) is anticipated based on the environmental and societal factors considered under the Proposed Action and the No-Action Alternative.
- While potential impacts to Soil, Air Quality, Noise and Circulation and Traffic are possible during construction, implementing best management practices (BMPs) would reduce these impacts to less than significant levels.

- Beneficial impacts to Land Use Considerations and Zoning are anticipated as the structure would prolong the lifespan of the single-family residence at the property and the new structure would be built in accordance with current building codes with shoreline protection and flood inundation in mind.
- Under Alternative I, the No Action Alternative, Land Use Considerations and Zoning would incur a negative impact as full use of the land will not be realized and condition of the structure at the Site would continue to degrade. Additional negative impacts are anticipated to Social Factors and Community Identity under Alternative I.

## **SECTION 1 INTRODUCTION AND SUMMARY**

### **1.1 Scope and Authority**


This Environmental Assessment (EA) is prepared pursuant to the Special Management Area (SMA) Ordinance, Chapter 25, Revised Ordinances of Honolulu (ROH) which requires that an EA be prepared for an SMA Use Permit in accordance to the procedural steps set forth in State Environmental Impact Statement (EIS) law, Chapter 343, Hawaii Revised Statutes (HRS). ~~This EA has been prepared pursuant to Chapter 343, Hawaii Revised Statutes (HRS) and associated Title 11, Chapter 200 Hawaii Administrative Rules (HAR).~~ The intent of the document is to ensure that systematic consideration is given to the environmental consequences of the Proposed Action. The Proposed Action is the demolition of and construction of a new two (2)-story single family residence in Honolulu, Hawaii (Figure 1). A Chapter 343, HRS EA is required because the project is located on a shoreline parcel and is subject to Chapter 205A, Coastal Zone Management regulations.

### **1.2 Project Information**

Project Name:	Lumahai Residence 4 Lumahai Street Honolulu, Hawaii 96825 Tax Map Key 3-9-013:32
Applicant:	Mr. Robert M. Wheatley Ms. Sue J. Lee 4 Lumahai Street Honolulu, Hawaii 96825
Agent:	Environmental Risk Analysis, LLC 905A Makahiki Way Honolulu, Hawaii 96826 Contact: Russell Okoji (808) 425-0968
Approving Agency:	City and County of Honolulu Department of Planning and Permitting 650 South King Street Honolulu, Hawaii 96813
Project Location:	4 Lumahai Street Honolulu, Hawaii 96825
Tax Map Key No.:	3-9-013:32 (Figure 2)
Total Affected Area:	0.4968-acre parcel

Existing Land Use:	Portions of the property are developed as residential, other portions are undeveloped.
State Land Use Classification:	Urban
State Special District:	N/A
Land Use Ordinance Zoning:	Residential (R-10)
Land Use Ordinance Special District:	Special Management Area
Flood Zone:	Flood Insurance Rate Map Zone D / VE
Land Owner:	Calsa LLC




<p><b>PROJECT NAME:</b>          Environmental Assessment          4 Lumahai Street          Honolulu, Hawaii 96825          Tax Map Key 3-9-013:32</p>	<p><b>FIGURE TITLE:</b>          Site Location Map</p>
	<p><b>FIGURE NUMBER:</b>          1</p>

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	<p>PROJECT NAME:</p> <p>Environmental Assessment 4 Lumahai Street Honolulu, Hawaii 96825 Tax Map Key 3-9-013:32</p>	FIGURE TITLE:	TMK Map
		FIGURE NUMBER:	2



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## **SECTION 2 PROJECT DESCRIPTION**

### **2.1 Project Description**

This EA has been prepared to satisfy the requirements of HRS Chapter 343. The purpose of the Proposed Action (i.e., demolition of existing structure and construction of single family housing) is to construct a 2-story single family residence.

The proposed development site (TMK 3-9-013:32) encompasses approximately 0.50 acres of land situated in Hawaii Kai on the southeast side of the Island of Oahu. Currently, this location is zoned residential. Mr. Wheatley and Ms. Lee are proposing to demolish an existing structure (Figure 3) on the property and construct a new single family residence (Figures 4 - 7). The objective of this project is to better utilize the land, provide housing which has been carefully designed to withstand potential flood inundation by the 1% Annual Chance Flood and rising sea levels, and protect the shoreline.

The existing house is approximately 2,099 square feet (SF) and was built in 1980. It is part of the Maunalua Triangle – Koko Kai Community Association which was incorporated on October 13, 1964. On February 27, 1987 the association established the Declaration of Protective Provisions as a set of architectural guidelines for all properties within the association to abide by which remains in place today. The house consists of 3 levels; a main, upper and lower floor and overlooks the long time popular tourist destination - Spitting Caves. It was built out of wood timbers with vertical wood siding and shingle style roofing.

The proposed project consists of the demolition of the existing singly-family residence and garage, site walls, stairs, plantings, foundation, and associated utilities. The proposed project includes renovation of the existing two car garage and reuse of the existing structure and foundation system. Two additional surface parking spaces will be included in front of the garage. Construction will consist of a new pre-fabricated modular, two story, single family residence comprised of a main kitchen, living and dining room, four bedrooms and baths, laundry and mechanical room. The project also includes a new pre-fabricated pool, shared exterior lanais and minor landscape upgrades.

Overall Floor Area = Main House – 3914 SF + Garage 524 SF (not including decks)

- Main Floor = 2630 SF
- Lower Floor = 1284 SF
- Garage = 524 SF
- Deck = 1598 SF

Estimated limits of grading/disturbance to be 0.03 acres, and excavation of 336 cubic yards and fill of 24 cubic yards.

#### Materials:

The house will be of modular construction with metal studs, wood clad exterior, and flat roof construction with gravel ballast. The house modules will sit on a super-structure of steel framing and columns attached to concrete piles embedded in the rock below.

#### Site Constraints:

The height restrictions and drainage easement down the center of the site dictated the overall shape of the house. It consists of two main living and sleeping bars orientated in the north south direction that sit against the east and west setback lines. A third 'kitchen' bar runs perpendicular to the living and sleeping bars conjoining them to form an 'H' shaped plan which hovers over the drainage easement. The eastern bar is located where the existing house currently sits. No portion of the new building or structure will impede on or touch the drainage easement.

The Site is adjacent to the 10-foot-wide public shoreline access to the "Spitting Caves" which is located immediately below the site. The lower 3,500-square-foot portion of the parcel is designated as a public access easement. Construction of the proposed project will be staged to not disrupt or block the existing public access to and along the shoreline at the project Site. Construction health and safety requirements will also consider the unprotected public who may be present in close proximity to the Site boundary.

#### Maximum height:

The maximum building height is established by the LUO and HOA Design Guidelines states as follows. "Improvements of any nature , other than landscaping must adhere to the more restrictive of a) LUO - 30 ft above existing grade or b) HOA – do the following: Commencing at the highest point of grade within the buildable area of the site, measure vertically to a point 15 feet above the base. This point shall be the high point of the height plane. Slope this plane downward at a ratio of 1 vertical feet to 10 horizontal feet towards the opposite buildable boundary." The Main Residence building height of 136'-2" and Garage building height of 152'-0" has been established to keep the building under both required maximum building height datums.

## **2.2 Construction Time Frame and Estimated Project Construction Costs**

The proposed project would be conducted in two phases. The first phase will be the demolition of the existing single-family residence, site walls, stairs, foundation and associated utilities. The subsequent phase will be construction of the single family residence. The construction includes renovation of existing two (2) car garage and reuse of existing structure and foundation system. Two additional surface parking spaces will be included in front of the garage. Construction of a new modular, two (2) story, single-family residence comprised of a main kitchen, living and dining room, four bedrooms and baths, laundry and mechanical room. The project also includes a new pool, shared exterior lanais and minor landscape upgrades.

The construction period is estimated to be from 2021 through 2024. The total budget for these improvement activities is estimated at \$1 million dollars. All funding for the project will be through private sources.



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Environmental Assessment  
4 Lumahai Street  
Honolulu, Hawaii 96825  
Tax Map Key 3-9-013:32

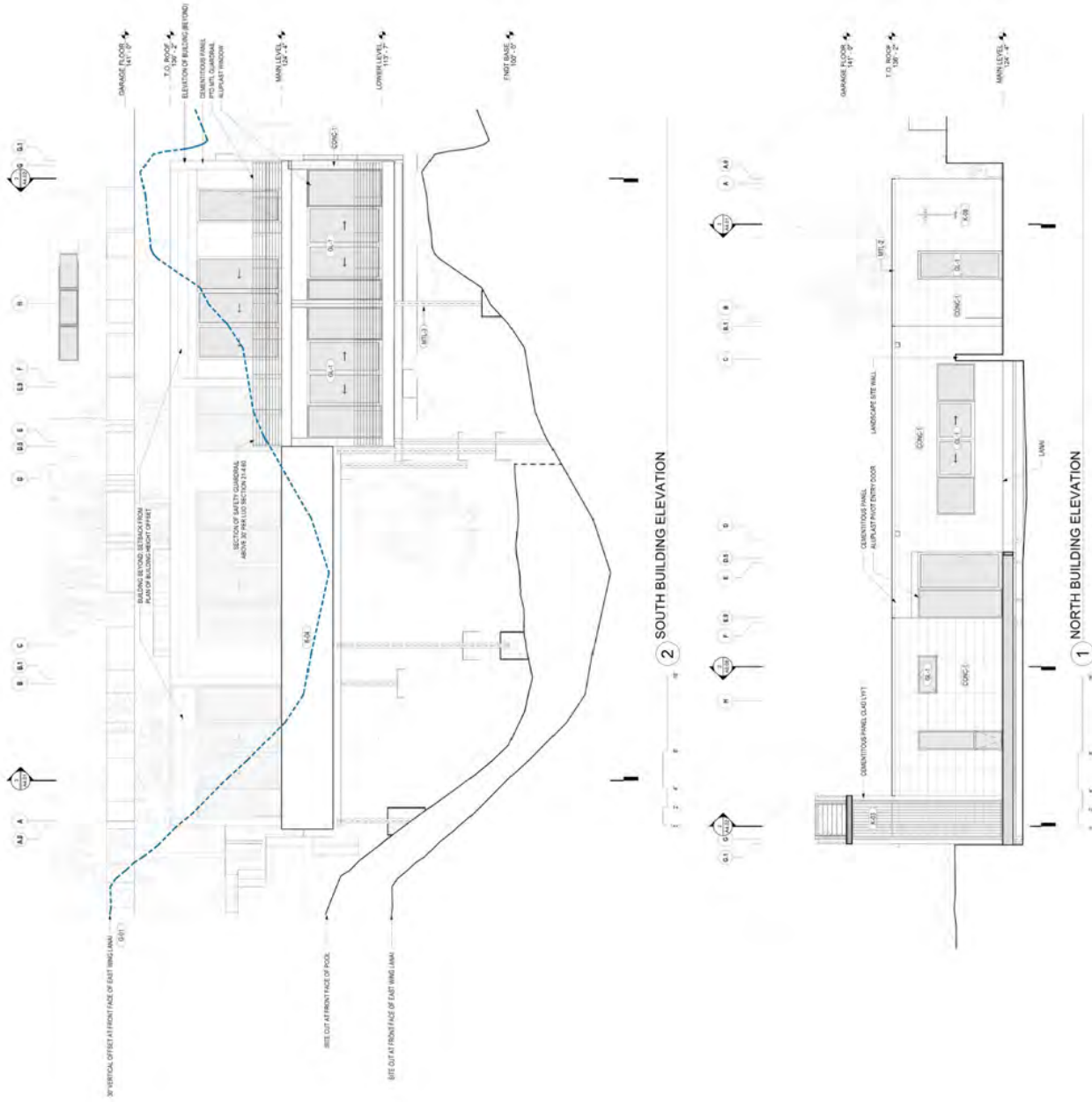
**FIGURE NUMBER:**

## Alternative II Site Plan

4

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\*Not to Scale

	<b>PROJECT NAME:</b> Environmental Assessment 4 Lumahai Street Honolulu, Hawaii 96825 Tax Map Key 3-9-013:32	<b>FIGURE TITLE:</b> Alternative II Elevations North and South
	<b>FIGURE NUMBER:</b>	5



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## ***SECTION 3 ALTERNATIVES INCLUDING THE PROPOSED ACTION***

This section details the alternatives that were analyzed in the EA. Under HAR, Title 11, Department of Health, Chapter 200 Environmental Impact Statement Rules, Section 11-200.1-17(f), all alternatives considered for the proposed project should be evaluated. These alternatives may possibly enhance environmental quality or avoid, reduce, or minimize some or all of the adverse environmental effects, costs, and risks.

### **3.1 Alternative I: No Action Alternative**

Under the No Action alternative, the Site would be kept as is with no changes or alterations.

### **3.2 Alternative II: The Proposed Action**

The Proposed Action is the demolition of an existing single family residence and the construction of a two (2)-story single family home (Figures 4 through 7).

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## **SECTION 4 AFFECTED ENVIRONMENT**

This section discusses the current status of the potentially affected environments should the Proposed Action be implemented. Affected environments include important natural and cultural sources and systems. Environmental consequences are provided in Section 5.

### **4.1 Physical Environment**

#### **4.1.1 Topography and Geology**

According to the United States Geological Survey (USGS), Honolulu, Hawaii, 7.5-minute topographic quadrangle map, the subject property elevation ranges from approximately 30 to 140 ~~90~~-feet above mean sea level. The Site is currently developed with a two-story single family dwelling, detached garage, and vegetation surrounding the parcel. None of the vegetation on the Site and surrounding property appeared to be distressed.

#### **4.1.2 Soils**

The United States Department of Agriculture (USDA) Soil Conservation Service classifies the soil within the Site as Koko silt loam (KsC) on the northern portion of the Site and rock outcrop (rRO) on the shoreline portion of the Site. Koko silt loam is classified as well drained with medium runoff, prime for farmland if irrigated, with slopes ranging from 6 to 12 percent. Koko silt loam parent material is volcanic ash. Koko silt loam belongs to hydrologic soil group C. The typical soil profile is silt loam between 0 and 16 inches below ground, clay loam from 16 to 48 inches, and paragravel from 48 to 60 inches. Depth to water table is greater than 80 inches.

Rock outcrop is classified as not prime farmland, with slopes can range from 5 to 99 percent. Rock outcrop is lithic bedrock with no soil profile or hydrolic soil group classification (USDA, 2021).

A geotechnical investigation was performed for the Site in which the subsurface condition at the site was explored by drilling 1 test boring to the depths of 10.0 feet below grade and excavating 2 test pits to depths of 1.0 to 4.0 feet below existing grade. In general, the borings disclosed the site to be underlain by elastic silt and silty gravel layers followed by dense to very dense volcanic tuff at a depth ranging from 0.5 to 3.0 feet below grade.

#### **4.1.3 Natural Hazard**

The Federal Emergency Management Agency (FEMA) flood insurance rate map (FIRM Map No. 15003C0393G, effective January 19, 2011) portrays the Site within Flood Zone D and VE, Base Flood Elevations determined (Figure 8). Flood Zone D is defined as Undetermined Flood Hazard. Flood Zone VE is defined as 100 Year Flood, Coastal, Wave Action, Base Elevation determined (EL 44). The Site is depicted as a Special Flood Hazard Area Subject to Inundation



by the 1% Annual Chance Flood. A portion of the property is considered a coastal high hazard area as defined in Chapter 21A, Revised Ordinances of Honolulu (ROH) (Flood Zone VE and V).

The Site is located in a tsunami evacuation zone. The City and County of Honolulu, Evacuation Zone Map is presented in Appendix A, Exhibit 3 and Figure 9. The National Hurricane Storm Surge Maps indicate portions of the coastal area along the Project site may be subject to flooding inundation of less than three feet above ground level during a Category 1 hurricane event.

The construction area is not anticipated to be impacted by waves, storm surges, high tide or shoreline erosion. According to the Hawaii Sea Level Rise Viewer, mapping of the project site shows no portions of the Site susceptible to sea level rise at 0.5 feet through 3.2 feet ([www.hawaiiisealevelriseviewer.com](http://www.hawaiiisealevelriseviewer.com)), Appendix A, Exhibit 3.

Due to the presence of a drainage easement running through the center of the property, a drainage easement encroachment variance will be requested and part of the approval process for a proposed structure to be installed within/over the City Drain Easement area. A variance will be granted with the assumption that the encroachment does not unduly interfere with the drainage improvements and drainage. Constructing over an existing drainage easement has the potential for storm related damages due to flooding of the drainage area.

#### 4.1.4 Flora and Fauna

The site has been developed and landscaped.

A data inquiry for records of listed threatened or endangered species for the parcel was sent to the United States Fish and Wildlife Service. The US Fish and Wildlife Service (USFWS, 2021) revealed there are six (6) federally listed species in the vicinity of the project area:

##### Mammals

- the Hawaiian hoary bat (*Lasiurus cinereus semotus*)

##### Birds

- the band-rumped storm-petrel Hawai'i DPS (*Oceanodroma castro*)
- the Hawaiian petrel (*Pterodroma sandwichensis*)
- the Newell's shearwater (*Puffinus auricularis newelli*)
- the wedge-tailed shearwater (*Ardenna pacificus*)
- the white tern (*Gygis alba*)

The State of Hawaii, Department of Land and Natural Resources, Division of Forestry and Wildlife also stated that the State endangered White Tern (*Gygis alba*) or Manu o Kū is known to nest in the proposed project vicinity.

No designated critical habitats were identified within or near the project boundaries. Mitigation and avoidance measures have been recommended by US Fish and Wildlife Service and the Division of Forestry and Wildlife which are presented in Section 5.

#### 4.1.5 Wetlands

The U.S. Fish and Wildlife Service (USFWS) National Wetland Inventory, Wetlands Mapper (USFWS, 2021) identified the Pacific Ocean to the south of the property as an Estuarine and Marine Wetland (M2RSN) close to the shoreline, and an Estuarine and Marine Deepwater (M1UBL) further offshore. The Wetlands Mapper figure is presented as Figure 10 and in Appendix A, Exhibit 14.

#### 4.1.6 Water Resources

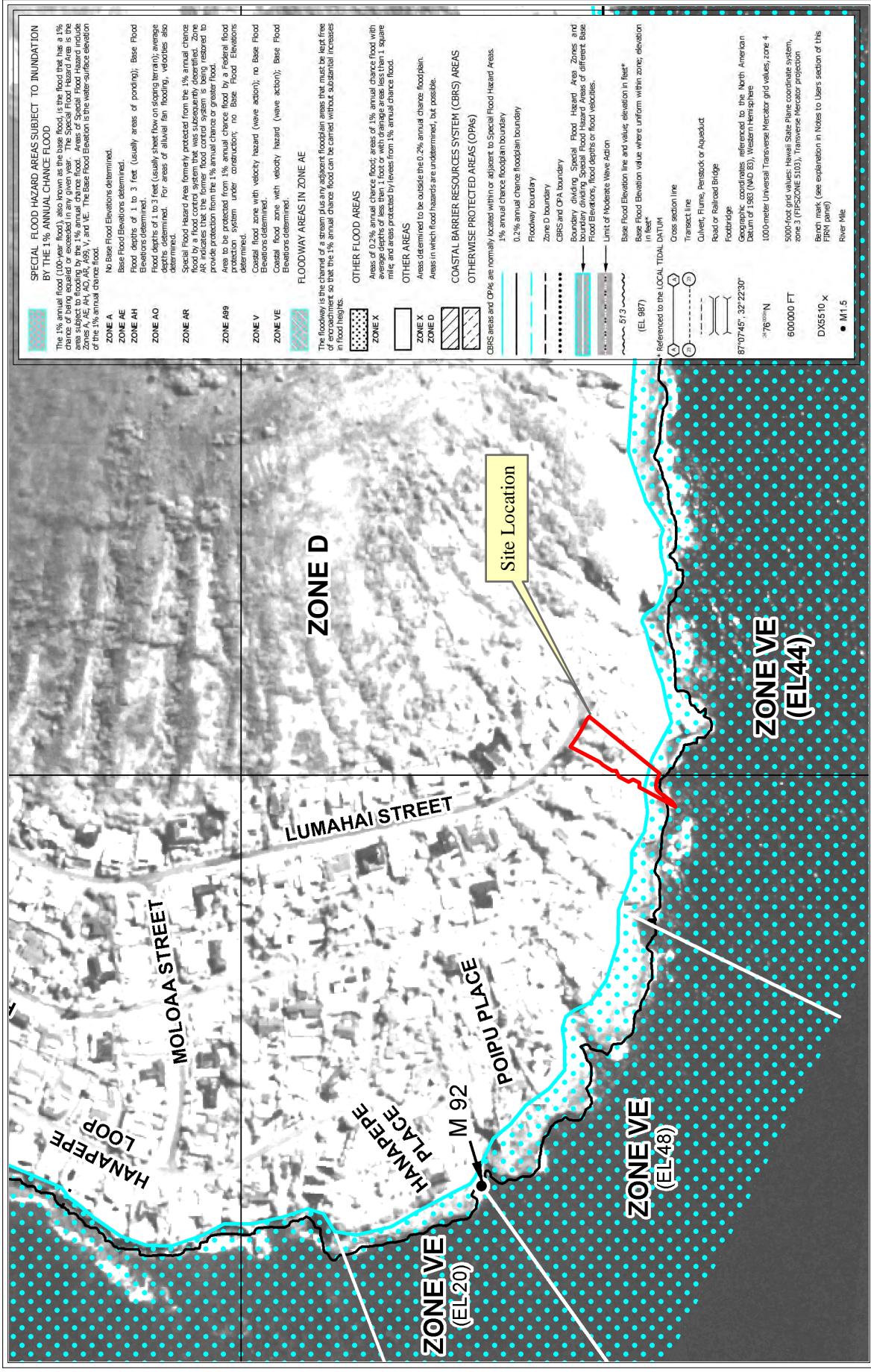
##### Groundwater

The Site overlies the Waialae aquifer system of the Honolulu aquifer sector. The aquifer system is comprised of an upper and lower aquifer. The upper aquifer is described as a basal (freshwater in contact with seawater), unconfined (where water table is upper surface of saturated aquifer), sedimentary (nonvolcanic lithology) aquifer. It is classified as a potentially used, neither ecologically important, nor a drinking water source, with high salinity (5,000 – 15,000 milligrams per liter [mg/l] chloride [Cl<sup>-</sup>]). It is considered replaceable and highly vulnerable to contamination (Mink and Lau, 1990).

The lower aquifer is described as a basal (freshwater in contact with seawater), confined (aquifer bounded by impermeable or poorly permeable formations, and top of saturated aquifer is below groundwater surface), flank (horizontally extensive lavas) aquifer. It is classified as a potentially used, fresh drinking water source (< 250 mg/l Cl<sup>-</sup>, irreplaceable, with a low vulnerability to contamination (Mink and Lau, 1990).

There is one (1) USGS wells within a 1-mile radius of the Site (USGS, 2021). Additionally, one (1) water well was identified in the State Database Well Information within a 1-mile radius of the subject property (UH, 2021). The Site is down-gradient of the Underground Injection Control (UIC) line (Figure 11) as such; the underlying aquifer is not considered a drinking water source and permit limitations governing the use of these waters are less stringent than for drinking water aquifers.

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<p>PROJECT NAME:</p> <p>Environmental Assessment 4 Lumahai Street Honolulu, Hawaii 96825 Tax Map Key 3-9-013:32</p>	<p>FIGURE TITLE:</p> <p>Flood Insurance Rate Map</p>	<p>FIGURE NUMBER:</p> <p>8</p>
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	<p><b>PROJECT NAME:</b>  Environmental Assessment  4 Lumahai Street  Honolulu, Hawaii 96825  Tax Map Key 3-9-013:32</p>	<p><b>FIGURE TITLE:</b>      Tsunami Inundation Zone Map</p>
		<p><b>FIGURE NUMBER:</b></p> <p>9</p>

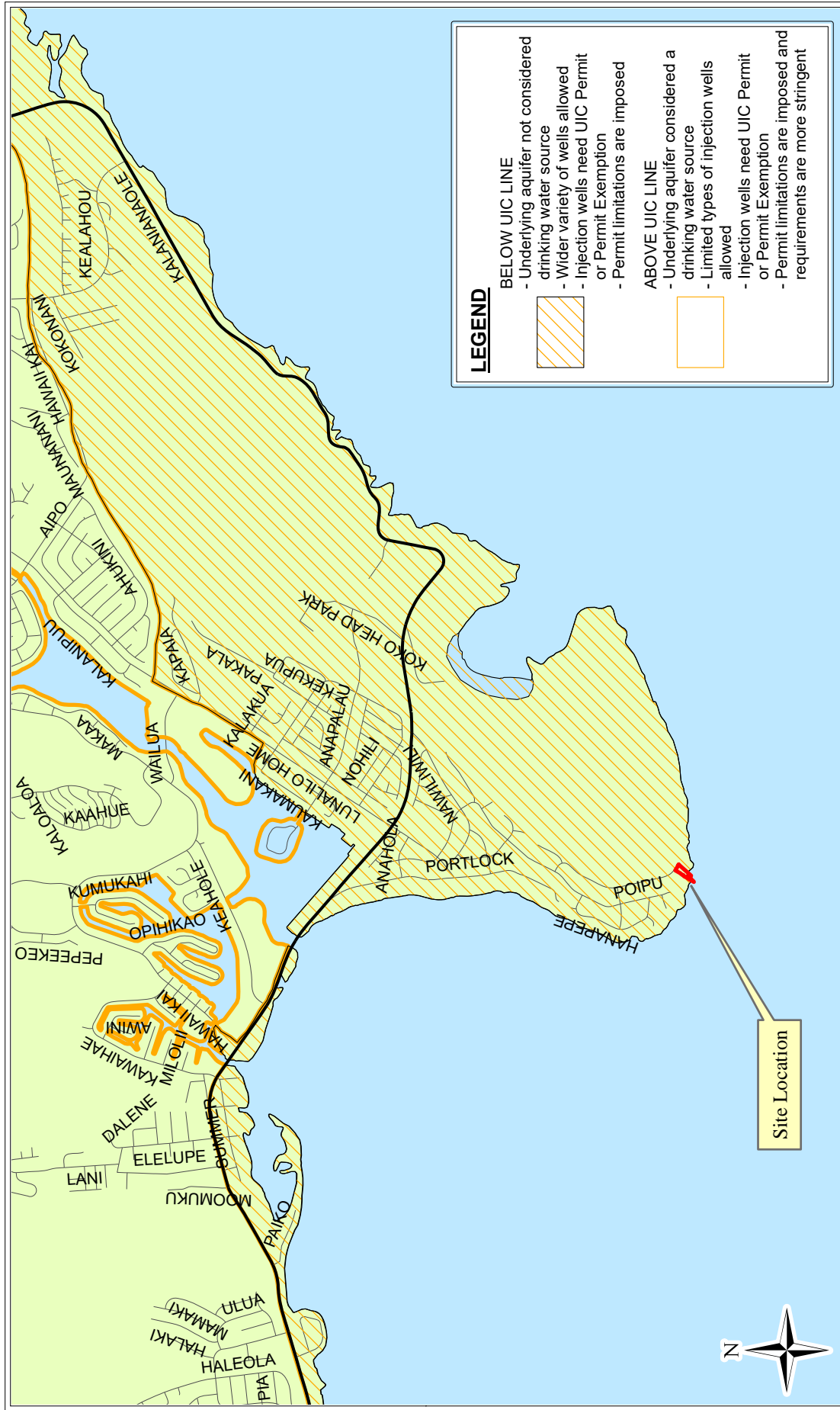
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<p><b>PROJECT NAME:</b>          Environmental Assessment          4 Lumahai Street          Honolulu, Hawaii 96825          Tax Map Key 3-9-013:32</p>	<p><b>FIGURE TITLE:</b>          Wetlands Map</p>
<p><b>FIGURE NUMBER:</b>          10</p>	



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<p><b>FIGURE TITLE:</b></p> <p>Underground Injection Control Map</p>	<p><b>PROJECT NAME:</b></p> <p>Environmental Assessment 4 Lumahai Street Honolulu, Hawaii 96825 Tax Map Key 3-9-013:32</p>	<p><b>FIGURE NUMBER:</b></p> <p>11</p>
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Studies have shown anticipated sea level rise could affect the boundary between saltwater and freshwater causing freshwater to be lifted. The result is a rise in the groundwater table. Low elevation coastal planes and shallow groundwater tables are prevalent in Hawaii. The rise in the groundwater level could affect drinking water by turning wells that were previously freshwater into brackish or saline. Groundwater at the Site is in contact with seawater. The aquifer supporting the Site could experience impacts from sea level rise.

### Surface Water

USFWS National Wetlands Inventory, Wetlands Mapper (USFWS, 2021) identified the Pacific Ocean to the south of the property. No other surface water bodies were identified within the vicinity of the Site.

#### 4.1.7 Climate and Air Quality

The climate in east Honolulu is characterized with temperatures averaging from the low 70s to the mid 80s. There is moderate humidity and easterly trade winds. The average annual rainfall is approximately 30 inches per year.

Air quality in the vicinity is most affected by proximity to ocean. The Hawaii State Department of Health (HDOH) maintains air monitoring locations throughout the state. In 2017 the State of Hawaii was in attainment of all National Ambient Air Quality Standards (NAAQS) (HDOH Annual Summary 2017 Air Quality Data). There are no air monitoring stations located in the vicinity of the Site. Air monitoring stations are located in areas of commercial, industrial, and transportation activities where the greatest impacts to air quality may be observed.

#### 4.1.8 Noise

Noise impacts from construction-related activities are regulated under the HAR, HDOH, Title 11, Chapter 46, Community Noise Control. The project area is a residential zone, and as such falls into District Class A under the HDOH regulations, with a maximum day (7:00 a.m. to 10:00 p.m.) and night (10:00 p.m. to 7:00 a.m.) sound level threshold of 55 decibels (dBA). District Class A also covers areas zoned as military and federal preservation land, conservation, open space and public space. Table 1 lists sound exposure levels (SELs) associated with typical equipment, in varying operating modes.

Table 1: Typical Equipment Sound Levels

Equipment	Sound Level (in dBA) Under Indicated Operational Mode		
	Idle Power	Full Power	Moving Under Load
Dozer	63	74	81
Dump Truck	70	71	74
Excavator	62	66	72
Forklift	63	69	91
Front-end Loader	60	62	68
Grader	63	68	78

Sweeper	64	76	85
Tractor-Trailer	67	78	77

#### 4.1.9 Solid Waste

Solid municipal waste on the island of Oahu is incinerated at the H-POWER waste-to-energy facility located in Campbell Industrial Park. According to the City and County of Honolulu, Department of Environmental Services website, Opala.org, Oahu recycling rates are above the national average and Honolulu ranks among the top cities in the country in landfill diversion. The H-POWER facility reduces the volume of waste entering the landfill by 70%. The remaining ash is deposited at the Waimanalo Gulch Sanitary Landfill. Construction and demolition wastes are handled separately and are disposed of at PVT Landfill.

#### 4.1.10 Hazardous Waste

A query of Hawaii Department of Health, Hazard Evaluation and Emergency Response (HEER) Office, iHEER database was performed to obtain information about state environmental release listings. One site was listed within a 1-mile radius of the Site.

- Koko Head Elementary School Building Exterior Soils (Approximately 1-mile away)
  - This site is listed due to a survey currently being conducted of all elementary schools on Oahu. The exterior soils around buildings at all elementary schools on Oahu is being investigated for metals and pesticides. Only preliminary results were available through HDOH Records at this time. No exceedances of the HDOH Environmental Action Levels (EALs) were reported for Koko Head Elementary School.

No sites in the vicinity of the subject Site were identified which would pose and environmental threat to the subject Site.

## 4.2 Social Environment

### 4.2.1 Land Use Considerations and Zoning

The City and County of Honolulu Site Land Use Ordinance Zoning Designation is Residential (R-10). The Site is not located in a Special District. The Site is located in a Special Management Area, as it sits on the shoreline.

### 4.2.2 Archaeological and Cultural Considerations

There are no archaeological resources noted in the Hawaii Cultural Resource Information System (HICRIS) site for the subject property. The Hanauma Bay State Park is located to the northeast of the Site. A spatial search of the property did not result in any resources.

ERA also reviewed two (2) archaeological assessments conducted in the vicinity of the Site to review if previous surveys have identified archaeological resources in the vicinity of the Site. The assessments reviewed included an Archaeological Assessment and Section 106 Review conducted for the Hawaii Kai Marina and Channel Maintenance Dredging, prepared by International Archaeological Research Institute, Inc. in 2010 (IARI, 2010), and an Archaeological Literature Review and Field Inspection conducted for the 567 Portlock Road Renovations Project, prepared by Cultural Surveys Hawai‘i, Inc. in 2013.

International Archaeological Research Institute, Inc. prepared an Archaeological Assessment and Section 106 Review conducted for the Hawaii Kai Marina and Channel Maintenance Dredging project in 2010. Maunalua Bay received its first Western visitors in the summer of 1786 when Captain Nathaniel Portlock of the King George and Captain George Dixon of the Queen Charlotte anchored offshore. Hawaiian canoes greeted Portlock and Dixon’s vessels as soon as they arrived. Extensive tradetook place between the two groups, in which the English traded iron nails, beads, buttons, and small pieces of iron, while the Hawaiians traded coconuts, plantains, sugarcane and sweet potato (Putzi et al., 1998). Portlock noted that the Maunalua Bay area was sparsely populated, with Honolulu being the primary economic center of the island at the time.

Post-contact, the area remained sparsely populated. In the late 1820s, Missionaries Gilbert F. Mathison and Levi Chamberlain visited the area. During his visit Mathison noted approximately 100 huts within a grove of coconut trees in Maunalua, although the exact location of the huts are unknown (McAllister, 1933). The population and development of the area remained minimal through the 19th century and early 20th century, as land use around the fishpond was mainly devoted to ranching and agriculture. In the late-1950s businessman Henry Kaiser began developing the area into a residential community and marina, including dredging of the fishpond into its present configuration.

Multiple burial sites have been discovered in Hawaii Kai, but none within the project area. The closest burial site to the proposed subject property is located on residential property in Portlock. In 2002, bones were discovered during excavation of a small ditch at 251 Portlock Road. The original location of the bones was unclear, and only pieces of rib and cranial fragments were discovered. This site is located approximately 1-mile to the north of the project Site. Several other other archaeological sites were identified around the Hawaii Kai area, including heiau, fishing shrines, and a burial cave, but none are located in the vicinity of the subject Site. This assessment focused on the area surrounding the Hawaii Kai Marina, however includes previously identified features as far as Niu Valley.

The Archaeological Literature Review and Field Inspection prepared by Cultural Surveys Hawai‘i, Inc. in September 2013 was conducted evaluate the presence of significant historic properties in the vicinity of the a property in the Portlock area. The nearest available freshwater resource identified was a small spring once located at Kawaihoa (Portlock Point) in close proximity to the south of the project area. Other freshwater sources include Kuapā Pond and inland streams to the northwest of the project area. The immediate vicinity of the Site was not an area of intense habitation or agriculture, although it is possible that there were once scattered fishermen’s houses in the pre-Contact and early post-Contact periods. The area was most likely not used for burial. Caves on the top of Koko Head and Koko Crater were used for burial.

Burials have also been found in coastal areas with natural Jaucus sand; however, the project area does not have a sandy beach area so it is an unlikely burial place. A few homes were built in the area around a small community before 1960, but the main development of the area was begun in 1959 by Henry Kaiser who constructed the Hawai'i Kai Residential area and the nearby Koko Head Marina.

The closet identified archaeological site identified in the vicinity of the Site is Site 46 Palialaea Ko'a (fishing shrine), located on the shoreline approximately 2,000-feet to the northwest of the project Site.

#### 4.2.3 Cultural Considerations

There are no cultural resources noted in the HICRIS site for the subject property. The Livable Hawaii Kai Hui and Malama Maunalua were contacted to comment on the proposed project. The Livable Hawaii Kai Hui stated that while the HICRIS did not identify cultural resources on the property located at 4 Lumahai Street, there are important mo'olelo and significant historical sites tied to the immediately surrounding area of Kawaihoa, Koko Head, and Hanauma. These cover everything from cultural and etiological mythology to documented use and development in both pre and post-1778 Hawaii. Accordingly, all construction and subsequent actions should be cognizant of their potential impacts and respectful of that history.

As discussed in Section 4.2.2, two (2) archaeological surveys were reviewed for sites in the vicinity of the subject property. International Archaeological Research Institute, Inc. prepared an Archaeological Assessment and Section 106 Review conducted for the Hawaii Kai Marina and Channel Maintenance Dredging project. This assessment evaluated historical use of the surrounding area for cultural practices including agriculturure, fishing, trails, and other cultural practices. These are summarized below.

Fishponds (loko i'a) were an important resource and food supply for the Ancient Hawaiians. Their importance is suggested by the fishing shrines (ko'a) that are often associated. During the the Great Land Division of 1848 (Māhele Aina) fishponds were considered part of the land and were included in land-division records. As fishponds are often located on- and offshore along calm and attractive shorelines, many have been the most sought-after areas of development over the past century. Many fishponds have been destroyed, and very few remain in their original condition. Even fewer still serve their traditional purpose.

Loko Keahupua-o-Maunalua (State Site No. 50-80-15-049) was located within the present-day Hawaii Kai Marina. Loko Keahupua-o-Maunalua was once one of the the largest fishpond in the state. Today its condition and function has changed dramatically, as a result of the development tof Hawaii Kai Marina since the 1950s, however it remains important to contemporary community groups who want to protect the pond from further damage. An 1851 map by Webster shows the pond covering an area of 523 acres (Webster, 1851). By 1921 the pond was partially filled and the surface area was reduced to 301 acres, plus 125 acres of swampland (Mann, 1921; McAllister 1933; Sterling and Summers 1978). A rock-walled fish trap appears on the 1921 map of the area near what is now the Hawaii Kai Marina entrance channel. The trap has not appeared on any more recent maps of the area and was not encountered during

the 2013 entrance channel dredging project. No record of the trap exists beyond the appearance on the 1921 map.

Sweet potato and similar root crops were grown on the land within the Maunalua Ahupua'a, but away from the Keahupua-o-Maunalua fishpond. Sweet potato would have been grown on the hillslopes and in drier lowlands. The fishpond and swampland would have been too wet for sweet potato cultivation. The soils in the fishpond may once have included wetland taro pondfield soils around pond margins, but this is not confirmed.

In the 1851 map by Webster, a road starts at the pali (cliff) at Makapuu Bay and terminates in Maunalua Bay. What Webster calls a "road" is described by Maly and Wong-Smith (O'Hare et al. 2003) as a trail that would have connected Waimanalo with the fishpond. The paved road was approximately 15 feet wide and was likely used for horse-drawn carts. The road may date to sometime after 1825.

Heiau (temples) are among the most substantial traditional spiritual structures in Hawaii. These often large temples were usually built by the ali'i. Today, relatively few heiau remain on Oahu, in part because of lack of continued maintenance. Many heiau were destroyed during the industrial and residential expansion since A.D. 1900. Three heiau still exist in the Hawaii Kai area but are well outside of the project area.

No cultural resources were identified by Cultural Surveys Hawai'i, Inc. in their field work conducted in 2013, however a long history of the Maunalua Ahupua'a and several mythological stories are associated with the vicinity of the Site. As discussed above, the nearest available freshwater resource identified was a small spring once located at Kawaihoa (Portlock Point) in close proximity to the south of the project area. The 2013 Archaeological Literature Review and Field Inspection discussed a legend concerning the Hawaiian god Kane and his brother Kanaloa. Kane and Kanaloa were travelling around the island of O'ahu near the shore at Kawaihoa Point. They told their brother, Kane'apua, to climb to the top of a hill (Koko Crater) and fetch them some water at a spring called Waiakaaiea. The gods told the brother that he must not urinate during the trip. He did, however, and when this happened his container filled but the spring dried up. When he returned, the brothers realized that he had disobeyed their orders and they could not drink the water in the container. Kanaloa thrust his spear into the ground and a spring of water gushed forward. The ashamed younger brother turned into the hill called after him, Mo'okua o Kane'apua, sometimes called Kuamo'okane. The coastal point location of the spring was called Kawaihoa, "the companions' water." This spring later dried up, and the area is arid today (Mokumaia, 1921).

There was no evidence that the project area and immediately surrounding land were used for traditional, customary, or cultural practices.

#### 4.2.4 Circulation and Traffic

The Site is only accessible from Lumahai Street by way of Poipu Drive. The immediate area surrounding the Site consists of other single family homes, therefore, traffic is light to moderate. Kalaniana'ole Highway is the only means to and from the area. Kalaniana'ole Highway (State



Highway 72) is contraflowed westbound between West Halemaumau Street to Ainakoa Avenue Route 88A (start of Interstate H-1) in the mornings between 5:00 am and 8:00 am.

The nearest bus stop is located at the intersection of Lunalilo Home Road and Kalanianaʻole Highway located approximately 1-mile to the north of the Site.

#### 4.2.5 Social Factors and Community Identity

The Site is located less than a mile from a golf course, small shops, grocery stores, a farmers market, a coffee shop and restaurants. There are also schools and parks within five miles.

According to the U.S. Census Bureau the population in East Honolulu Census Designated Place (CDP) was approximately 50,922 people (Census, 2020). There are approximately 16,560 households with an average of 2.86 people per household (Census, 2015-2019).

#### 4.2.6 Economic Considerations

According to the U.S. Census Bureau (Census, 2020) the median household income in East Honolulu CDP is \$133,165 in 2019 dollars, compared to the \$85,857 median household income for all of Honolulu County and \$81,275 for Hawaii.

#### 4.2.7 Recreational and Public Facilities

Recreational activities in the area mainly consist of outdoor activities such as boating, swimming, surfing, scuba diving, snorkeling, dolphin and whale watching, hiking and camping, golfing, and fishing.

A number of recreational areas and facilities are located throughout the island of Oahu, consisting of beach parks, golf courses, district and neighborhood parks, and community centers. Koko Kai Beach Mini Park, Kawaikui Beach Park, Mauna Lua Bay Beach Park, Kuliouou Beach Park, and Wawamalu Beach Park are in close proximity to the Site located along the coast on the Pacific Ocean. Hanauma Bay Nature Preserve is located in close proximity to the Site. There are also a many state parks and hiking trails including Hanauma Bay Ridge Hike, Koko Crater Railway Hike, Kuliouou Ridge Trail, Koko Crater Arch Trail, and Makapu Point Lighthouse Trail.

#### 4.2.8 Visual and Aesthetic Resources

East Honolulu does afford beautiful views, however the subject property is not specifically identified in any county or State plans or studies as containing scenic vistas or view planes.

#### 4.2.9 Infrastructure Systems and Utilities

Drinking water and wastewater utility services is supplied by the Board of Water Supply (BWS). Drinking water supply is from the Aina Koa Well II, Halawa Shaft, Kaimuki Pump Station Low Service, Kalihi Shaft, Punanani Wells, and Wilder Wells. Sewer services are managed by the

Department of Environmental Services. Electricity service is supplied by Hawaiian Electric Company. Gas service is supplied by Hawaii Gas. Telephone, cable, and internet can be provided by Spectrum or Hawaiian Telcom, as well as satellite service providers.

The Honolulu Fire Department (HFD) has 43 engine companies throughout the island of Oahu. The closest fire station is the Fire Station 34 Hawaii Kai. It is located at 515 Lunalilo Home Rd, approximately 2-miles from the Site. The next nearest station is Fire Station 23 Wailupe, located at 5046 Kalanianaʻole Hwy, approximately 5 miles from the Site.

The Honolulu Police Department (HPD) is headquartered in Honolulu. The Site is located in District 7 which encompasses about 40 square miles in East Honolulu, from Punahou Street to Makapuu Point. The District 7 administrative office is located at 801 South Beretania St., and the criminal investigations office is located at 4087 Diamond Head Road.

The closest hospital to the Site is Straub Medical Center, located at 888 S. King Street, approximately 12 miles from the project site. Straub Medical Center provides emergency, medical, dental, diagnostic, and therapeutic health services. Other urgent care and medical clinics are located in close proximity to the Site including Straub Medical Center - Hawaii Kai Clinic, located at 7192 Kalanianaʻole Hwy #A200, and Queen's Island Urgent Care - Hawaii Kai located at 377 Keahole St Suite E-108.

In regards to schools which service the Site, the Site is located within the Department of Education's Honolulu District, Farrington-Kaiser-Kalani Complex Area. Koko Head, Haihaione, and Kamiloiki Elementary Schools service the area, with Koko Head Elementary assigned to the project Site. Niu Valley Middle School and Kaiser High School would service the Site. Koko Head Elementary School reported 285 students in its 2019-2020 academic year roster. Niu Valley Middle School reported 1,351 students in its 2019-2020 academic year roster. Kaiser High School reported 1,351 students in its 2019-2020 academic year roster. In addition, there are three (3) pre-schools in the Hawaii Kai area. KCAA Kuapa Preschool, Kinder Kids International Preschool, and Happy Keiki Preschool are located approximately 3-miles from the Site. These schools offer education for ages 1 through 5 years old.

University of Hawaii at Manoa (UH) is located 1.5 miles from the Site. The campus offers on-site and distance learning classes and programs. Other colleges and universities are located Oahu.

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## **SECTION 5 ENVIRONMENTAL CONSEQUENCES AND PROPOSED MITIGATION MEASURES**

Potential impacts of Alternative I: No Action and Alternative II: Proposed Action are described in this section of the report. Impacts are evaluated on whether they constitute a “significant effect” on a particular environmental setting. Impacts are described as having No Impact, Significant Adverse Impact or Beneficial Impact depending on the outcome to the environment. The terms impact and effect are used synonymously in this EA. Impacts may apply to the full range of natural, aesthetic, historic, cultural and economic resources. The following subsections define key terms used throughout Section 5.

### Significance Criteria

A “significant effect” is defined by HRS Chapter 343 as “the sum of effects on the quality of the environment, including actions that irrevocably commit a natural resource, curtail the range of beneficial uses of the environment, are contrary to the State's environmental policies or long-term environmental goals as established by law, or adversely affect the economic welfare, social welfare, or cultural practices of the community and State.”

### Beneficial Versus Adverse

Impacts from the Proposed Action may also have beneficial or adverse effects to the environment. Beneficial impacts are those that have favorable outcomes and add value to the environment. Adverse impacts are those that produce detrimental effects and cause harm to the environment.

### Cumulative Impacts

Cumulative impacts are two or more individual effects which, when considered together, compound or increase the overall impact. Cumulative impacts can arise from the individual effects of a single action or from the combined effects of past, present, or future actions. Thus, cumulative impacts can result from individually minor but collectively significant actions taken over a period of time. The cumulative impacts of implementing the Proposed Action along with past and reasonably foreseeable future projects proposed were assessed based upon available information. Cumulative impacts are discussed in Section 5.3.

### Mitigative Measures

Mitigative measures are defined as measures taken to avoid, reduce and compensate for adverse impacts to a resource. Mitigative measures are identified and discussed for each alternative, where relevant. In this EA, mitigative measures are provided to reduce adverse impacts when levels of impact are more than minor and to ensure levels of impact are not significant. Only those mitigative measures that are practicable have been identified.

## 5.1 Physical Environment

### 5.1.1 Topography and Geology

#### Alternative I

No significant adverse impacts to the topography or geology are expected to result from Alternative I. The Site would remain the same as there would be no construction.

#### Alternative II

No significant adverse impacts to the topography or geology are expected to result from Alternative II. As the Site is previously disturbed, no significant changes to the topography are necessary for construction. Construction and operational activities would follow existing topography. No construction within or modification to the existing shoreline is anticipated. The proposed structure is proposed to be constructed on the mauka portion of the property away from the existing shoreline.

### 5.1.2 Soils

#### Alternative I

No significant adverse impacts are anticipated for Alternative I. Site conditions would remain the same.

#### Alternative II

Alternative II could have a potential significant adverse impact to soils as a result of construction activities (i.e., clearing, grubbing, excavation and trenching) that disturb the earth and soils. A geotechnical investigation was performed for the property which concluded that relatively shallow footings that bear on firm on-site soils, properly compacted fill or the underlying volcanic tuff may be used to support the proposed structures. The Site soils were deemed suitable as support for the Proposed Action. The geotechnical investigation is included as Appendix B.

Additional footings will be required as a part of construction. Exposed soils are susceptible to erosion during periods of heavy rain or wind, however the Site location is generally arid for most of the year. Short-term adverse impacts would be minimized to less than significant or avoided by implementing temporary erosion control measures during construction activities. Best management practices (BMPs) with erosion and sediment control measures, including silt fences, berms and other erosion control devices, shall be prepared and implemented to confine the proposed excavation and construction activities, and prevent potential soil, construction debris and polluted runoff from adversely impacting the coastal ecosystem, and the shoreline below.

### 5.1.3 Natural Hazard

#### Alternative I

No significant adverse impacts to natural hazard vulnerability would result from Alternative I as the Site will not change.

#### Alternative II

No significant adverse impacts to natural hazard vulnerability would result from Alternative II. The project area is noted with a base flood elevation of 44 feet above mean sea level and is classified within Flood Zone D and VE. The construction design has the proposed dwelling, at its lowest level, at an elevation of 113 feet above mean sea level. No adverse impacts are anticipated in relation to the structure and the established flood elevation. The Site is depicted as a Special Flood Hazard Area Subject to Inundation by the 1% Annual Chance Flood. In addition, the Site is located in a Tsunami Evacuation Zone. No portion of the Site or proposed structure lies within the areas identified to be impacted by sea level rise of 0.5 feet or 3.2 feet. Construction design has taken in to account the Flood Zone/tsunami/sea level rise concerns and has included design elements to prevent adverse impacts to the project, such as placement of the structure as far from the shoreline as possible.

A drainage easement is present running through the center of the property, which could result in additional hazards to occupants of the structure during storm conditions. A drainage easement encroachment variance will be requested and part of the approval process for a proposed structure to be installed within/over the City Drain Easement area. The structure design incorporates the drainage easement and the structure will not unduly interfere with the drainage improvements and drainage. Hazards would be similar to the existing structure at the property.

### 5.1.4 Flora and Fauna

#### Alternative I

No significant adverse impacts to flora/fauna are anticipated due to Alternative I as the site would remain undeveloped.

#### Alternative II

No significant adverse impacts to flora and fauna are anticipated due to Alternative II. No threatened or endangered species are known to exist in the project area. An inquiry with the USFWS (USFWS, 2021) revealed there are six (6) federally listed species in the vicinity of the project area. Impacts may occur to the federally listed species in absence of mitigation measures to reduct adverse impacts to less than significant. The USFWS recommendations to avoid or minimize project impacts to listed species are provided below:

### *Hawaiian hoary bat (*Lasiurus cinereus semotus*)*

The Hawaiian hoary bat roosts in both exotic and native woody vegetation across all islands and will leave young unattended in trees and shrubs when they forage. If trees or shrubs 15 feet or taller are cleared during the pupping season, there is a risk that young bats could inadvertently be harmed or killed since they are too young to fly or may not move away. Additionally, Hawaiian hoary bats forage for insects from as low as 3 feet to higher than 500 feet above the ground and can become entangled in barbed wire used for fencing.

To avoid and minimize impacts to the endangered Hawaiian hoary bat, the USFWS recommend that projects incorporate the following applicable measures into the project description:

- Do not disturb, remove, or trim woody plants greater than 15 feet tall during the bat birthing and pup rearing season (June 1 through September 15).
- Do not use barbed wire for fencing.

### *Hawaiian Seabirds*

The following mitigation measures are applicable to:

- the band-rumped storm-petrel Hawai'i DPS (*Oceanodroma castro*)
- the Hawaiian petrel (*Pterodroma sandwichensis*)
- the Newell's shearwater (*Puffinus auricularis newelli*)
- the white tern (*Gygis alba*)

Newell's shearwaters are found in the highest densities on Kaua'i with lower densities on all of the other islands, except Lāna'i. Hawaiian Petrel populations are greatest on Maui, Lāna'i, and Kaua'i with lower densities on Hawai'i and Molokai. Band-rumped storm-petrels are found in low densities throughout the islands. All islands may experience overflight at night.

For all projects, Hawaiian seabirds may traverse the project area at night during the breeding, nesting and fledging seasons (March 1 to December 15). Outdoor lighting could result in seabird disorientation, fallout, and injury or mortality. Seabirds are attracted to lights and after circling the lights they may become exhausted and collide with nearby wires, buildings, or other structures or they may land on the ground. Downed seabirds are subject to increased mortality due to collision with automobiles, starvation, and predation by dogs, cats, and other predators. Young birds (fledglings) traversing the project area between September 15 and December 15, in their first flights from their mountain nests to the sea, are particularly vulnerable.

To avoid and minimize potential project impacts to Hawaiian seabirds, the USFWS recommend that projects incorporate the following applicable measures into the project description:

- Fully shield all outdoor lights so the bulb can only be seen from below bulb height and only use when necessary.
- Install automatic motion sensor switches and timer controls on all outdoor lights or turn off lights when human activity is not occurring in the lighted area.

- Avoid nighttime construction during the seabird fledging period, September 15 through December 15.

*Wedge-tailed shearwater (Ardenna pacificus)*

Unlike other Hawaiian seabird species, wedge-tailed shearwaters nest in littoral vegetation along coastlines. Nesting adults, eggs, and chicks are particularly susceptible to impacts from human disturbance and predators.

To avoid and minimize potential project impacts to wedge-tailed shearwaters, the USFWS recommend that projects incorporate the following applicable measures into the project description:

- Conduct surveys throughout the project area during the species' breeding season (March through November) to determine the presence and location of nesting areas.
- If wedge-tailed shearwaters nest within a proposed project area and construction would cause ground disturbance, time project construction to occur outside of the breeding season (March through November).
- If outdoor lighting is used, use light shields that are completely opaque, appropriately sized, and positioned so that the bulb is only visible from below and the light from the shielded source cannot be seen from the beach.
- Install automatic motion sensor switches and timer controls on all outdoor lights or turn off lights when human activity is not occurring in the lighted area.

The State of Hawaii, Office of Planning & Sustainable Development (OPSD) concurs that the exterior lighting and lamp posts associated with the proposed residence project shall be cut-off luminaries to provide the necessary shielding to mitigate potential light pollution in the coastal areas, and lessen possible seabird strikes. No artificial light, except as provided in HRS §§ 205A-30.5(b) and 205A-71(b), shall be directed to travel across property boundaries toward the shoreline and ocean.

The State of Hawaii, Department of Land and Natural Resources, Division of Forestry and Wildlife also stated that the State endangered White Tern (*Gygis alba*) or Manu o Kū is known to nest in the proposed project vicinity. If tree trimming or removal is planned, Division of Forestry and Wildlife recommends surveying for the presence of White Terns prior to any action that could disturb the trees. White Tern pairs lay their single egg in a branch fork with no nest. The eggs and chicks can be easily dislodged by construction equipment that nudges the trees. If a nest is discovered, Division of Forestry and Wildlife staff will be contacted for assistance.

The Division of Forestry and Wildlife also stated that the project should minimizing the movement of plant or soil material between worksites, such as in fill. Soil and plant material may contain invasive fungal pathogens (e.g. Rapid 'Ōhi'a Death), vertebrate and invertebrate pests (e.g. Little Fire Ants, Coconut Rhinoceros Beetles), or invasive plant parts that could harm our native species and ecosystems. All equipment, materials, and personnel should be cleaned of excess soil and debris to minimize the risk of spreading invasive species. Gear that may contain soil, such as work boots and vehicles, should be thoroughly cleaned with water and sprayed with



70% alcohol solution to prevent the spread of Rapid ‘Ōhi‘a Death and other harmful fungal pathogens. The Division of Forestry and Wildlife recommends using native plant species for landscaping that are appropriate for the area (i.e. climate conditions are suitable for the plants to thrive, historically occurred there, etc.)

#### 5.1.5 Wetlands

##### Alternative I

No significant adverse impacts to wetlands are anticipated due to Alternative I as the Site would remain undeveloped.

##### Alternative II

No significant adverse impacts are anticipated under Alternative II. Alternative II, the Proposed Action, would not result in loss or destruction of existing wetland resources with the use of appropriate Best Management Practices (BMPs).

#### 5.1.6 Water Resources

##### Alternative I

No significant adverse impacts to groundwater or surface water would result under Alternative I, the no action alternative. Site conditions would remain the same.

##### Alternative II

No significant adverse impacts are anticipated to groundwater resources assuming implementation of Alternative II, the Proposed Action. Hazardous substances that could adversely affect groundwater are not likely to be introduced or released into the soil given the proposed use of the Site as a residential structure. No significant impact to surface water near the Site is anticipated because of construction or operations associated with Alternative II as there are no streams or surface water bodies at the Site.

Potable water use and wastewater generated by the proposed project would not impact current services as the project would replace an existing single family home.

The Site is not located on a sole source aquifer. No significant impact to surface water near the Site is anticipated as a result of construction or operations associated with Alternative II with the use of BMPs. There are no designated wild and scenic rivers in the State of Hawaii.

A National Pollutant Discharge Elimination System (NPDES) permit, if required, would be obtained for discharges of wastewater, to include stormwater runoff, prior to construction or

operations. Any discharges would comply with the NPDES permit and State Water Quality Standards (HAR Chapter 11-55, and HAR Chapter 11-54 respectively).

### 5.1.7 Climate and Air Quality

#### Alternative I

Alternative I would not have a significant adverse impact to air quality as the existing conditions would remain unchanged.

#### Alternative II

Under Alternative II, potentially significant adverse impacts to air quality from earth moving and excavation activities during construction activities (i.e., fugitive dust emissions) are anticipated. Temporary increases in traffic during the construction phase of Alternative II are also anticipated to increase emissions from combustion as well as increase fugitive dust. Adequate dust control measures, in compliance with Section 11-60.1-33, "Fugitive Dust", of HAR will be implemented during all phases of construction. Use of BMPs (i.e., watering of roads and trenches during project activities, use of a dust screen which surrounds the project area) would reduce any impacts to less than significant. Other reasonable measures to control airborne, visible fugitive dust which will be considered include, but are not limited to, the following:

- Planning the different phases of construction, focusing on minimizing the amount of airborne, visible fugitive dust-generating materials and activities, centralizing on-site vehicular traffic routes, and locating potential dust-generating equipment in areas of the least impact;
- Providing an adequate water source at the site prior to start-up of construction activities;
- Landscaping and providing rapid covering of bare areas, including slopes, starting from the initial grading phase;
- Minimizing airborne, visible fugitive dust from shoulders and access roads;
- Providing reasonable dust control measures during weekends, after hours, and prior to daily start-up of construction activities; and
- Controlling airborne, visible fugitive dust from debris being hauled away from the project site.

Once project construction is complete, impacts to air quality would not be significant.

### 5.1.8 Noise

#### Alternative I

No significant adverse impacts to noise are expected to occur under Alternative I. Site conditions would remain unchanged.

## Alternative II

Under Alternative II, potentially significant adverse impacts to noise environment from heavy equipment use during construction activities are anticipated. The potential significant adverse impacts will be reduced to less than significant by abiding by the HDOH Administrative Rules, Title 11, Chapter 46, "Community Noise Control" regulations and CFR 24 CFR Subpart B - Noise Abatement and Control for the duration of the project. Construction activities at the Site may increase noise levels, however these activities will be limited to daylight hours. If noise levels exceed allowable levels, then a noise permit will be obtained.

Once the project is completed, no significant increases in noise are anticipated. Noise levels would not be anticipated to increase as the proposed action replaces an existing residential home. No industrial processes or activities that would contribute to a significant adverse impact to the noise environment are planned under Alternative II.

### 5.1.9 Solid Waste

## Alternative I

No significant adverse impacts to solid waste are expected to occur under Alternative I. Site conditions would remain unchanged.

## Alternative II

Construction activities at the Site will increase solid waste and construction wastes. Waste generated by site preparation will primarily consist of demolition of one structure, vegetation, rocks, and debris from clearing, grubbing, and grading. These wastes will be minimized by proper planning of building materials and recycling efforts. A solid waste management plan will be coordinated with the City and County's Solid Waste Division for the disposal of onsite and construction-related waste material.

Once the project is completed, solid waste generation is not anticipated to increase over the current conditions. If there is a slight population change due to increased land use, H-POWER will have adequate capacity to accommodate waste generated from the proposed project. This increase in waste generation would not contribute to a significant adverse impact under Alternative II. In addition, the proposed project will support programs that encourage waste reduction, recycling, and other green/environmentally friendly practices.

### 5.1.10 Hazardous Waste

## Alternative I

No significant adverse impacts are expected to occur under Alternative I. Site conditions would remain unchanged.

## Alternative II

Construction activities at the Site has the potential to temporarily increase use of potential hazardous wastes. Use of chemicals at the Site would increase during construction such as fueling for heavy equipment and construction materials (e.g. paints, stains). These wastes can be minimized by pre-construction proper planning. Existing potentially hazardous wastes would be removed during construction activities. Demolition waste would be characterized for hazardous characteristics (lead, asbestos, etc.) and properly removed and disposed to prevent release to the environment.

Once the project is completed, household hazardous waste (e.g., batteries, paints, cleaners, etc.) generation will not be increased over the current conditions. As there would be no additional waste generation from current conditions, Alternative II would not contribute to a significant adverse impact to the hazardous waste environment.

## **5.2 Social Environment**

### 5.2.1 Land Use Considerations and Zoning

#### Alternative I

No significant adverse impacts to are expected to occur under Alternative I. Site conditions would remain unchanged.

#### Alternative II

Alternative II would have a beneficial impact on land use and zoning. The proposed action would modernize and increase the lifespan of the property for residential use.

### 5.2.2 Archaeological ~~and Cultural~~ Considerations

#### Alternative I

No significant adverse impacts are associated with the No Action Alternative as no change to the current infrastructure would occur.

#### Alternative II

Alternative II would involve ground disturbing activities that may adversely impact historical and archaeological resources. However, these impacts are considered unlikely as the Site is previously disturbed and developed. The area surrounding the Site has no history of archeological resources according to a query of the State Historic Preservation Division (SHPD), Hawaii Cultural Resource Information System (HICRIS). SHPD consultation will be performed prior to ground disturbance activities.

ERA also reviewed two (2) archaeological assessments conducted in the vicinity of the Site to review if previous surveys have identified archaeological resources in the vicinity of the Site. The assessments reviewed included an Archaeological Assessment and Section 106 Review conducted for the Hawaii Kai Marina and Channel Maintenance Dredging, prepared by International Archaeological Research Institute, Inc. in 2010 (IARI, 2010), and an Archaeological Literature Review and Field Inspection conducted for the 567 Portlock Road Renovations Project, prepared by Cultural Surveys Hawai'i, Inc. in 2013 (CSH, 2013). Neither assessment identified archaeological resources in the vicinity of the subject Site.

If human osteological remains or a potential archaeological site are uncovered during construction activities, mitigation measures will be implemented. Specifically, site work will cease and SHPD would be contacted in compliance with Chapter 6E of the HRS. These mitigation measures will ensure no loss or destruction of historic and archaeological resources, avoid adverse impacts to potential sites, and ensure compliance with State laws and regulations. Implementation of mitigation measures would reduce any potential impacts associated with Alternative II to less than significant.

### 5.2.3 Cultural Considerations

#### Alternative I

No significant adverse impacts are associated with the No Action Alternative as no change to the current infrastructure would occur.

#### Alternative II

No cultural resources noted in the HICRIS site for the subject property. The Livable Hawaii Kai Hui was contacted to comment on the proposed project. The Livable Hawaii Kai Hui stated that there are important mo'olelo and significant historical sites tied to the immediately surrounding area of Kawaihoa, Koko Head, and Hanauma. Accordingly, all construction and subsequent actions should be cognizant of their potential impacts and respectful of that history.

ERA also reviewed two (2) archaeological assessments conducted in the vicinity of the Site to review if previous surveys have identified cultural resources in the vicinity of the Site. These surveys provided a history of the Hawaii Kai and Portlock area and the developmental history of the surrounding area. No significant cultural resources were identified at the Site or immediate vicinity of the Site, however a long history of the Maunalua area was documented. Construction at the Site should be considerate of the history of the vicinity of the Site, especially in regards to the coastal regions in the immediate vicinity of the Site.

Mitigation measures during construction will ensure preservation of any nearby cultural resources by preventing impacts to areas offsite including BMPs to protect the shoreline, limiting fugitive dust generation, and preservation of beach access. Additionally, the proposed structure lies within the approximate existing footprint of the existing structure and no significant changes to topography or visual impact to the shoreline is anticipated.

It is also currently projected that permitting requirements will necessitate holding public meetings where the applicant will be able to gather feedback from the public for any potential known cultural practices associated with the property and vicinity of the Site. Implementation of mitigation measures would reduce any potential impacts associated with Alternative II to less than significant.

#### 5.2.4 Circulation and Traffic

##### Alternative I

No significant adverse impacts are anticipated under Alternative I. Site conditions would remain the same.

##### Alternative II

No significant adverse impacts are anticipated under Alternative II. During construction activities, access and traffic are anticipated to increase compared to normal Site operations. If access and traffic are impacted as a result of renovation activities, minimizing impact on traffic and access to less than significant levels can be accomplished by the following:

- 1) Mobilizing and de-mobilizing construction vehicles and equipment during non-peak traffic hours.
- 2) Use of temporary traffic control devices, such as signage, barricades, and cones, in accordance with City and County traffic standards; and
- 3) If necessary, utilize off-duty police to manage traffic.

The State of Hawaii Department of Transportation (HDOT) was requested to provide pre-consultation comments relating to the construction of the new structure. HDOH has jurisdiction over Kalanianaʻole Highway (State Route 72) located approximately 1.5 miles from the Site. HDOT does not anticipate any significant adverse impacts to state roadways due to implementation of the proposed action.

After construction, there would be no significant adverse impact to the traffic as the proposed action would replace an existing residential property. Minimal, if any, increase in traffic would be anticipated due to the operation of the new structure at the property.

#### 5.2.5 Social Factors and Community Identity

##### Alternative I

Alternative I would have no impact to the social and community identity. Site conditions would remain unchanged.

## Alternative II

Construction of a new residential structure is expected to have a beneficial impact on the social and community identity of the area. The proposed project will add provide construction employment for the local community. The proposed project would also rehabilitate aging housing and increase the lifespan of the intended use of the Site for residential purposes.

### 5.2.6 Economic Considerations

#### Alternative I

No significant adverse impacts are anticipated under Alternative I. Site conditions would remain unchanged.

#### Alternative II

No adverse impacts to the economy in the vicinity of the Site are anticipated as a result under Alternative II. The proposed project will result in short-term economic benefits for the construction industry and may help support small businesses in the area.

### 5.2.7 Recreational and Public Facilities

#### Alternative I

No significant impacts are anticipated under Alternative I. Site conditions would remain unchanged.

#### Alternative II

Alternative II is expected to have no significant adverse impact on the recreational and public facilities on the island. There are many beach parks, hiking trails, and other recreational facilities in the area. Minimal, if any, population increase would not have a significant impact to the recreational and public facilities.

Regarding public access to the Spitting Caves, during construction and upon completion of the project, the beach access will remain unimpacted. The construction activities will be staged to not hinder access to the public recreation areas, including ingress and egress effects of vehicle traffic, generated from the proposed construction activities. Upon completion of the project, any damages/deficiencies along the roadways, sidewalks, and storm drain catch basins on Lumahai Street shall be repaired.

### 5.2.8 Visual and Aesthetic Resources

#### Alternative I

There would be no significant adverse impact on the visual resources and aesthetics in or around the project area anticipated with Alternative I as this alternative shall not bring about any changes in the existing conditions.

#### Alternative II

No significant adverse impacts to visual resources are expected under Alternative II. Construction of the new residential structure will not significantly impact the view of adjacent houses. The Proposed development at the Site is not identified as a scenic vista or view plane nor will it affect identified scenic vistas or view planes. The proposed action will not affect scenic corridors and coastal scenic and open space resources. The design of the new structure majority sits below street level and occupies largely the same footprint as the existing structure.

### 5.2.9 Infrastructure Systems and Utilities

#### Alternative I

No significant adverse impacts are anticipated under Alternative I. Site conditions would remain unchanged.

#### Alternative II

Alternative II is expected to have little impact on the infrastructure and utilities in and around the project area. Water, sewer, electricity and gas services are expected to be supplied by the same service providers used within the area.

The Department of Facility Maintenance, BWS, HFD, and HPD were requested to provide pre-consultation comments relating to the construction of the new structure at the Site. The Department of Facility Maintenance stated that once the construction phase commence, approved BMPs should be installed fronting all drainage facilities on Lumahai Street. Upon completion of the project, any damages/deficiencies along the roadways, sidewalks, and storm drain catch basins on Lumahai Street shall be repaired.

BWS indicated that the existing water system is adequate to accommodate the proposed development. BWS noted that all developments are required to utilize water conservation measures such as use of nonpotable water for irrigation such as rain catchment systems, drought tolerant plants, xeriscape landscaping, efficient irrigation systems, and use of ultra-low flow water fixtures and toilets. Waste diversion will be implemented during the proposed project construction and operation. The proposed project plans to recycle/reuse (mulch for ground cover, repurpose materials when appropriate, etc.).



HFD commented that the design should incorporate the structure should not be located more than 150 feet from fire department access roads. Water supply for the purposes of fire protection shall be provided. Civil drawings will be submitted for fire department approval to ensure that all fire codes are met prior to construction.

HPD reviewed the information and did not have concerns or comments regarding implementation of the proposed action.

No impacts to educational facilities are anticipated.

### **5.3 Cumulative Impact**

Cumulative effects are not anticipated as a result of implementing Alternatives I or II. The actions themselves do not involve a commitment to larger actions. The alternatives will likely not result in substantial secondary impacts, such as population changes or effects on public facilities. Alternative I will effect no change to the project area. Alternative II involves the demolition of an existing structure and construction of a two (2)-story single family residence. Population changes or effects on public facilities would be minimal. The change in population and demand for public facilities would be readily met by existing infrastructure.

## **SECTION 6 RELATIONSHIP TO PLANS, POLICIES, AND CONTROLS**

The purpose of Section 6 is to identify plans and policies that may be applicable to this project and summarize the relationship of the plans and policies to project actions. Additionally, the intent is to revisit these plans and policies to qualify any significant effects from actions proposed in this EA.

### **6.1 State and County Land Use Plans and Policies**

#### **6.1.1 State Land Use**

Chapter 205, Hawaii Revised Statutes, relating to the Land Use Commission (LUC), establishes four (4) major land use districts in which all lands in the state are placed. These districts are designated as Urban, Rural, Agricultural, and Conservation. The parcel proposed for development is located in an Urban district.

#### **6.1.2 City and County Zoning**

##### Land Use Ordinance

The City and County of Honolulu, Department of Planning and Permitting, indicates the Site Land Use Ordinance Zoning Designation is Residential (R-10). Land Use Ordinance (LUO), Chapter 21, ROH lists Dwellings, detached, one-family as a permitted use in a R-10 Zoning District.

##### Flood Hazard Areas Ordinance

The rules and regulations of the National Flood Insurance Program (NFIP), Title 44 of the Code of Federal Regulations (44 CFR), are in effect when development falls within a Special Flood Hazard Area (high-risk areas). 44 CFR, Chapter 1, Subchapter B, Part 60 reflects the minimum standards as set forth by the NFIP.

The City and County of Honolulu has created the Flood Hazard Areas Ordinance to regulate construction in areas of flood hazard and/or tsunami inundation. These regulations are necessary for participation in the federal flood insurance program, which provides federal financial assistance. The proposed project will include design elements to conform with the General Development Standards and additional requirements for properties designated as Zone VE.

Sec. 21A-1.6 General development standards.

Structures within the special flood hazard areas shall conform to the following:

- (a) Be designed and adequately anchored to prevent flotation, collapse or lateral movement resulting from hydrodynamic and hydrostatic loads, including effects from buoyancy caused by the base flood.
- (b) Constructed of flood-resistant materials.
- (c) Constructed by methods and practices that minimize flood damage.

- (d) Constructed with electrical, heating, ventilation, plumbing, air conditioning, and other service facilities that are designed and/or located so as to prevent water from entering or accumulating within the components during conditions of flooding.
- (e) Provided with adequate drainage to minimize damage in accordance with the storm drainage standards of the department.
- (f) For new or replacement potable water system and facilities, be designed to minimize or eliminate infiltration of flood waters into the systems.
- (g) For new or replacement sanitary sewer system and waste disposal system, be designed, located and constructed so as to minimize impairment to them or contamination from them during and subsequent to flooding by the base flood.

The Site is not located in a Special District, but is located in a Special Management Area, due to the parcel's proximity to the shoreline.

### 6.1.3 Coastal Zone Management, Chapter 205A

Chapter 205A, HRS, also known as the Coastal Zone Management Program, is a long-range comprehensive plan that serves as a guide for the future long-range development of the State to protect recreational, historic, scenic and open space resources, coastal ecosystems, economic uses, coastal hazards, beach and coastal dunes, marine and coastal resources as well as manage development and stimulate public participation. The proposed project is in accordance with the following objectives and policies ~~goals~~ of the Coastal Zone Management Program:

- ~~Protect valuable coastal ecosystems, including reefs, beaches, and coastal dunes, from disruption and minimize adverse impacts on all coastal ecosystems.~~
- ~~Reduce hazard to life and property from coastal hazards.~~
- Recreational Resources: provide coastal recreational opportunities accessible to the public;
- Historic resources: protect, preserve, and, where desirable, restore those natural and manmade historic and prehistoric resources in the coastal zone management area that are significant in Hawaiian and American history and culture.
- Scenic and open space resources: protect, preserve, and, where desirable, restore or improve the quality of coastal scenic and open space resources.
- Coastal ecosystems: protect valuable coastal ecosystems, including reefs, beaches, and coastal dunes, from disruption and minimize adverse impacts on all coastal ecosystems.
- Economic uses: provide public or private facilities and improvements important to the State's economy in suitable locations.
- Coastal hazards: reduce hazard to life and property from coastal hazards.
- Managing development: improve the development review process, communication, and public participation in the management of coastal resources and hazards.
- Public participation: stimulate public awareness, education, and participation in coastal management.
- Beach protection: protect beaches and coastal dunes for (i) public use and recreation; (ii) The benefit of coastal ecosystems; and (iii) use as natural buffers against coastal hazards, and coordinate and fund beach management and protection.

- Marine and coastal resources: promote the protection, use, and development of marine and coastal resources to assure their sustainability.

Senate Bill 2060: Relating to Coastal Zone Management was revised in 2020 to include residential and commercial development for parcels that are impacted by waves, storm surges, high tide, or shorelines erosion, which had not been included previously.

On September 15, 2020, the Coastal Zone Management law was amended to eliminate the single-family dwelling exemption in the SMA for all shoreline parcels, regardless of whether dwelling floor area is less than 7,500 square feet. Consequently, the proposed project is considered a "development" and has a valuation in excess of \$500,000, a Major SMA Use Permit needs to be obtained from the City Council. This EA has been prepared in support of the Major SMA Use Permit.

#### 6.1.4 Shoreline Setback Ordinance, Chapter 23

The Shoreline Setback Ordinance was designed to protect and preserve the natural shoreline, especially sandy beaches; to protect and preserve public pedestrian access laterally along the shoreline and to the sea; and to protect and preserve open space along the shoreline. It is also a secondary policy of the city to reduce hazards to property from coastal floods. The Shoreline Setback Ordinance works in conjunction with Coastal Zone Management, Chapter 205A.

A Shoreline Certification was performed in 2019 ~~will be obtained as part of the permitting process for this project.~~ The proposed structure will not be building within the 40-foot shoreline setback. BMPs would prevent any runoff or other construction debris from migrating off-site. This project is not seeking a variance from the shoreline setback.

#### 6.1.5 East Honolulu Sustainable Communities Plan

The City and County of Honolulu General Plan (1992, amended in 2002) “sets forth the long-range objectives and policies for the general welfare and, together with the regional development plans, provides a direction and framework to guide the programs and activities of the City and County of Honolulu.” The General Plan evaluated the population, economic activity, natural environment, housing, transportation and utilities, energy, physical development and urban design, public safety, health and education, culture and recreation, and government operations and fiscal management. The General Plan was followed by the Development Plans and Sustainable Community Plans which addressed 8 areas of Oahu: Primary Urban Center, Central Oahu, Ewa, Waianae, North Shore, Koolauloa, Koolaupoko, and East Honolulu.

The proposed project is in accordance with the East Honolulu Sustainable Communities Plan, approved via Ordinance 21-11 (Bill 88 (2020) CO2, effective April 21, 2021, goals, objectives, and policies, including:

### 3.5 RESIDENTIAL USES

- Contain the spread of development by increasing housing capacity in East Honolulu through infill development. This will occur through development and expansions of existing homes.
- Effective residential lot design standards that limit building height, coverage, paving, and removal of landscaping are implemented through the LUO.
- Create an inclusive and accessible urban or suburban environment that encourages active and healthy aging, specifically age-in-place principles and the Universal Design Standards that address or include the following: Equitable, flexibility, simple and intuitive, perception information, tolerance for error, low physical effort, and size and space.
- Adopt maps and regulations to incorporate the guidance from the City Climate Commission and the Hawai'i Sea Level Rise Vulnerability and Adaptation Report on vulnerability to coastal erosion and flooding and other science based projections of climate change impacts into land use regulations and permit processes.
- Encourage new structures to be designed to withstand the anticipated impacts of sea level rise over the building's lifespan.

## 6.2 Necessary Permits and Approvals

The following approvals may be required for the implementation of the project. All approvals will be obtained in accordance with approving agency guidelines.

### 6.2.1 State of Hawaii

- (a) Chapter 343, HRS, environmental review
- (b) Department of Health
  - Chapter 46, HAR – noise permit, as required
  - Chapter 11-23, HAR – Underground Injection Control permit for the use of drainage injection wells to handle discharges of storm water runoff.
  - Chapter 11-55, HAR – National Pollutant Discharge Elimination System (NPDES) permit for construction stormwater discharges.
- (c) Chapter 6E, HRS, State Historic Preservation Division, as required
- (d) Shoreline Certification Survey

### 6.2.2 City and County of Honolulu

- (a) Special Management Area – Major Permit.
- (b) Drainage Easement Encroachment Variance
- (c) Building Permits for infrastructure improvements.
- (d) Grading Permits for earthwork activities associated with infrastructure improvements.

## **SECTION 7 FINDINGS AND REASONS SUPPORTING AGENCY DETERMINATION**

In accordance with the provisions set forth in Chapter 343, HRS, this EA has preliminarily determined that the project will not have significant adverse impacts on the environment. As such, a Finding of No Significant Impact (FONSI) has been determined for the Proposed Action. Anticipated impacts will be temporary and will not adversely impact the environmental quality of the area.

Title 11-200.1-13, EIS Rules, establishes “Significance Criteria” to determine whether an EIS is required pursuant to the EIS rules. A review of the “Significance Criteria” used as a basis for the above determination is presented below. An action is determined to have a significant impact on the environment if it meets any one of the thirteen (13) criteria.

- (1) Involves an irrevocable commitment to loss or destruction of any natural or cultural resource;**

Alternative II would not cause loss or destruction of any natural or cultural resources. The Site has been previously disturbed and constructed upon. Surrounding areas are also developed with residential properties.

- (2) Curtails the range of beneficial uses of the environment;**

Alternative II will not curtail the range of beneficial uses of the environment. In fact, the implementation of the Proposed Action would increase beneficial uses of the Site by providing updated housing, increasing the usable lifespan of the Site.

- (3) Conflicts with the State’s long-term environmental policies or goals and guidelines as expressed in Chapter 344, HRS; and any revisions thereof and amendments thereto, court decisions, or executive orders;**

Alternative II will be in conformance with the Chapter 344, HRS, State Environmental Policy, to enhance the quality of life. The Proposed Action will provide updated housing and improved Site conditions for the protection of the surrounding environment. This is in compliance with the residential zoning status.

- (4) Substantially affects the economic welfare, social welfare, and cultural practices of the community or State;**

Alternative II would have beneficial effects to the economic and social welfare of the community and State. The construction phase of the proposed alternatives would create jobs, and the families who occupy the development will generate income for local businesses. There would be no change in Site activities as it will remain residential. Any potential impacts following implementation of the project would be similar to those prior to the proposed project.

**(5) Substantially affects public health;**

Alternative II will not have significant effects on public health. The Proposed Action would provide safe and sanitary housing within a suitable living environment, which would ensure a better standard of living.

**(6) Involves substantial secondary impacts, such as population changes or effects on public facilities;**

Alternative II will likely not result in substantial secondary impacts, such as population changes or effects on public facilities. The Proposed Action involves the construction of a two (2)-story single family residence. Population changes or effects on public facilities would be minimal. The change in population and demand for public facilities would be readily met by existing infrastructure.

**(7) Involves a substantial degradation of environmental quality;**

Alternative II is not likely to result in a substantial degradation of environmental quality. Assessment of impacts associated with the Proposed Action have been minimal.

**(8) Is individually limited but cumulatively has considerable effect on the environment, or involves a commitment for larger actions;**

Cumulative effects are not anticipated as a result of implementing Alternative II. The Proposed Action does not involve a commitment to larger actions. Much of the land near the Site is previously developed and minimal additional construction projects are anticipated. It is not anticipated that there will be cumulative effects that will have an impact to the environment.

**(9) Substantially affects a rare, threatened, or endangered species, or its habitat;**

Alternative II is not anticipated to have substantial effects on rare, threatened, or endangered species, or any critical habitat. USFWS identified six (6) federally listed species in the vicinity of the project area. Mitigation measures will be employed as to avoid or minimize any impacts to rare, threatened, or endangered species during and post-construction. There is little potential for encountering such resources as there are no rare, threatened, or endangered species or critical habitats at the Site.

**(10) Detrimentially affects air or water quality or ambient noise levels;**

No significant impacts on the area's long-term air or ambient noise environments are anticipated to result from Alternative II. During the construction phase of the proposed project, these parameters will be monitored. Any exceedances in local, state, or federal rules or regulations will be mitigated to minimize their effects to the area. Water quality impacts are not anticipated and do not require mitigation measures.

- (11) Affects or is likely to suffer damage by being in an environmentally sensitive area such as a flood plain, tsunami zone, beach, erosion-prone area, geologically hazardous land, estuary, freshwater, or coastal waters;**

The Site is located in an environmentally sensitive area, such as a flood plain, tsunami zone, beach, erosion-prone area, geologically hazardous land, estuary, freshwater, or coastal waters. BMPs would keep an construction runoff/debris from migrating off-site.

- (12) Substantially affects scenic vistas and view planes identified in county or state plans or studies; or,**

Alternative II will not affect the visual aesthetics of the areas identified in the county or state plans and studies. The proposed structure replaces an existing structure and not extending significantly laterally or vertically from existing conditions. Coastal view planes will not be impacted by the proposed action.

- (13) Requires substantial energy consumption.**

Alternative II would not require substantial energy consumption. The change in population and demand for energy would be minimal and readily met by existing infrastructure. In addition, energy efficient appliances will be incorporated into the project design.

In summary, the proposed project will provide an additional long term residence in East Honolulu. Based on the foregoing analysis, the proposed action is not anticipated to result in any significant adverse impacts. Accordingly, the proposed action is anticipated to be a Finding of No Significant Impact (FONSI).



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## **SECTION 8 REFERENCES**

- City and County of Honolulu, 2021. East Honolulu Sustainable Communities Plan. <http://www.honoluludpp.org/Portals/0/pdfs/planning/Koolauloa/KoolauloaSCP.pdf>
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## ***SECTION 9 AGENCIES AND ORGANIZATIONS CONSULTED***

The following agencies and organizations were contacted during the pre-consultation and consultation period. Pre-consultation, comment letters, and response letters have been reproduced and included in Appendix A, Exhibit 17.

### **Federal Agencies**

Department of Agriculture, Natural Resources Conservation Service

Department of the Army, US Army Corps of Engineers

Department of Commerce, National Marine Fisheries Service

Department of Homeland Security, US Coast Guard

Department of the Interior, Fish and Wildlife Service\*

Department of the Interior, Geological Survey - PIWS

Department of the Interior, National Parks Service

Department of the Navy, Pacific Division

Environmental Protection Agency, Region IX Pacific Islands

Department of Transportation, Federal Aviation Administration

Department of Transportation, Federal Highways Administration

Department of Transportation, Federal Transit Administration

### **State Agencies**

Department of Accounting and General Services (DAGS)\*

Department of Agriculture

Department of Business Economic Development & Tourism (DBEDT)

DBEDT, State Office of Planning

DBEDT, Strategic Industries Division

Department of Defense, Emergency Management/Civil Defense

Department of Hawaiian Home Lands\*

#### **DOH, Clean Air Branch\***

DOH, Environmental Health Administration

DOH, Solid and Hazardous Waste Branch

DOH, Wastewater Branch

Department of Education

Department of Land & Natural Resources\*

DLNR SHPD

Department of Transportation\*

Office of Hawaiian Affairs\*

Office of Planning and Sustainable Development\*

University of Hawaii, Environmental Center

University of Hawaii, Marine Program

University of Hawaii, Capital Improvement

University of Hawaii, Water Resources Research Center

### **County Agencies**

Board of Water Supply\*

City and County of Honolulu Fire Department\*

City and County of Honolulu Police Department\*

City and County of Honolulu Department of Design and Construction\*

City and County of Honolulu Department of Environmental Services

City and County of Honolulu Department of Facility Maintenance\*

City and County of Honolulu Department of Community Services

City and County of Honolulu Department of Parks and Recreation\*

City and County of Honolulu Department of Planning and Permitting\*

City and County of Honolulu Department of Transportation Services

### **Others**

Livable Hawaii Kai Hui\*

Malama Maunalua

\*Indicates a comment letter was received ~~prior to completion of the~~ from review of the Draft EA document.

## **APPENDIX A**

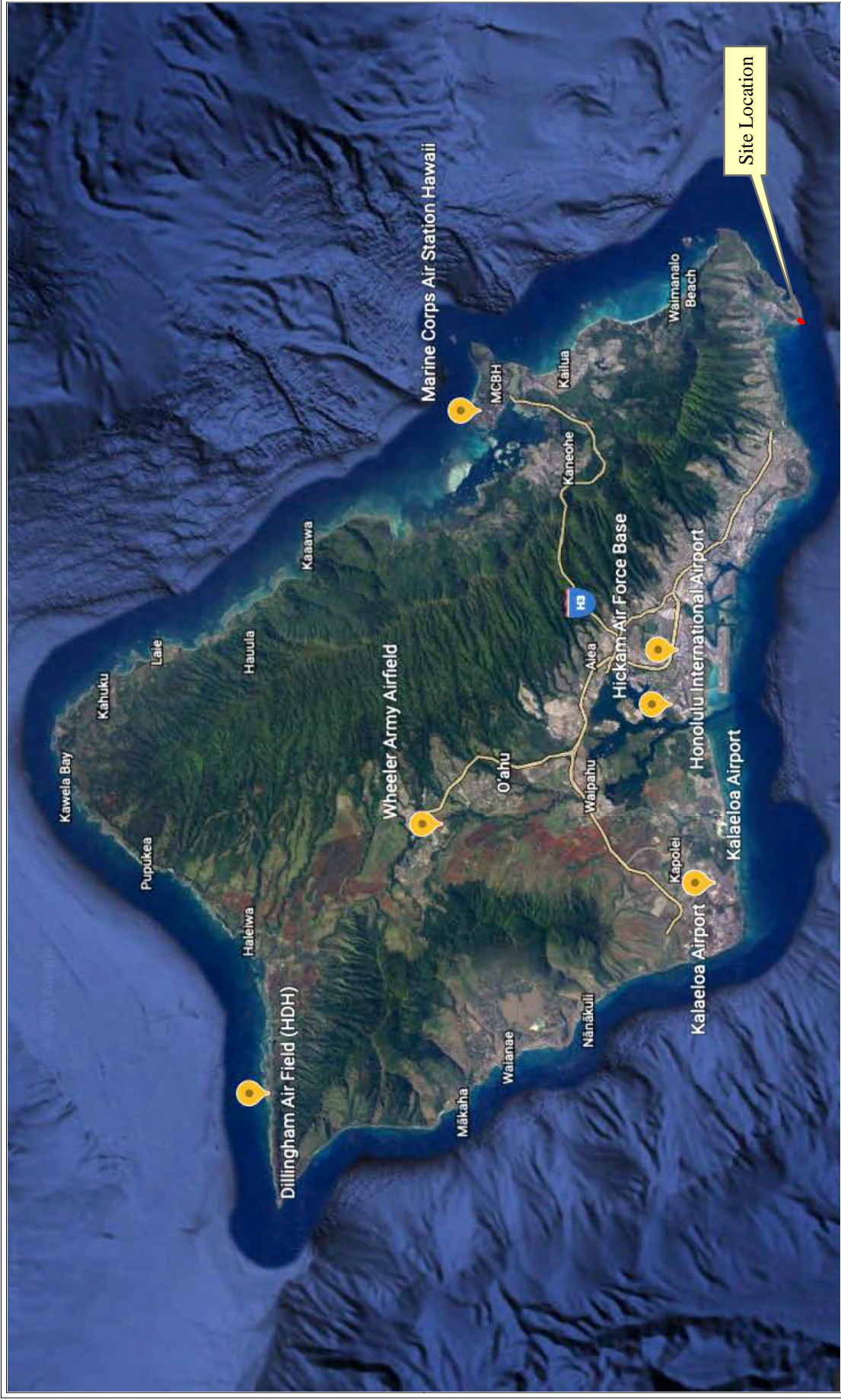



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#### Exhibit 1: Airport Hazards

There are no airports or airfields in the vicinity of the subject site.

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<div></div>	<p><b>PROJECT NAME:</b> Environmental Assessment 4 Lumahai Street Honolulu, Hawaii 96825 Tax Map Key 3-9-013:32</p>	<p><b>EXHIBIT TITLE:</b> Airports and Airfields</p> <p><b>EXHIBIT NUMBER:</b> 1</p>
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## Exhibit 2: Coastal Barrier Resources

The site is not located within a coastal zone as noted by the Coastal Barrier Mapper

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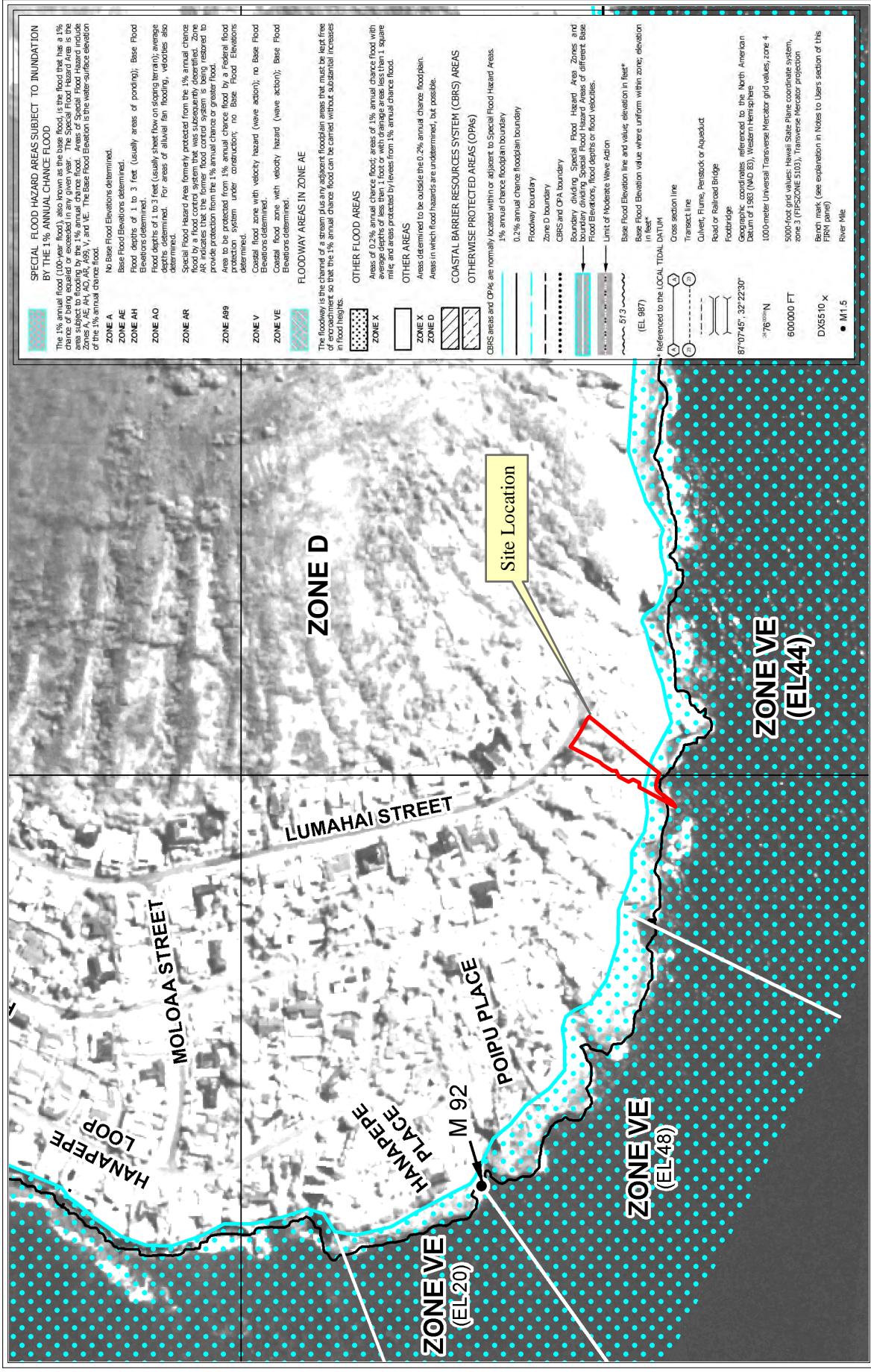
<div>  </div>	<div> <div>PROJECT NAME:</div> <div>Environmental Assessment 4 Lumahai Street Honolulu, Hawaii 96825 Tax Map Key 3-9-013:32</div> </div>	
	<div>EXHIBIT TITLE:</div> <div>Coastal Barrier Resources</div>	<div>EXHIBIT NUMBER:</div> <div>2</div>



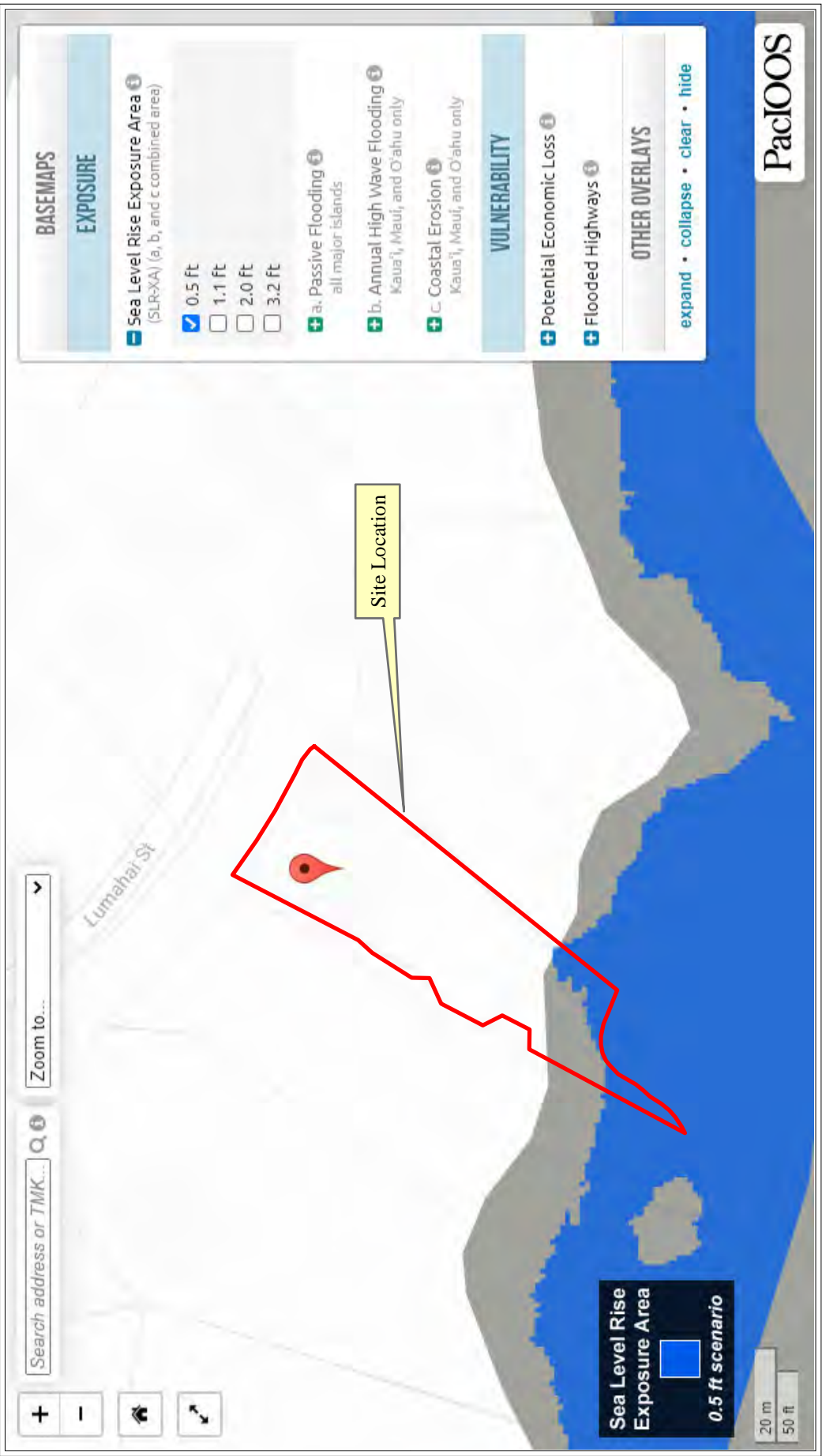
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### Exhibit 3: Flood Insurance

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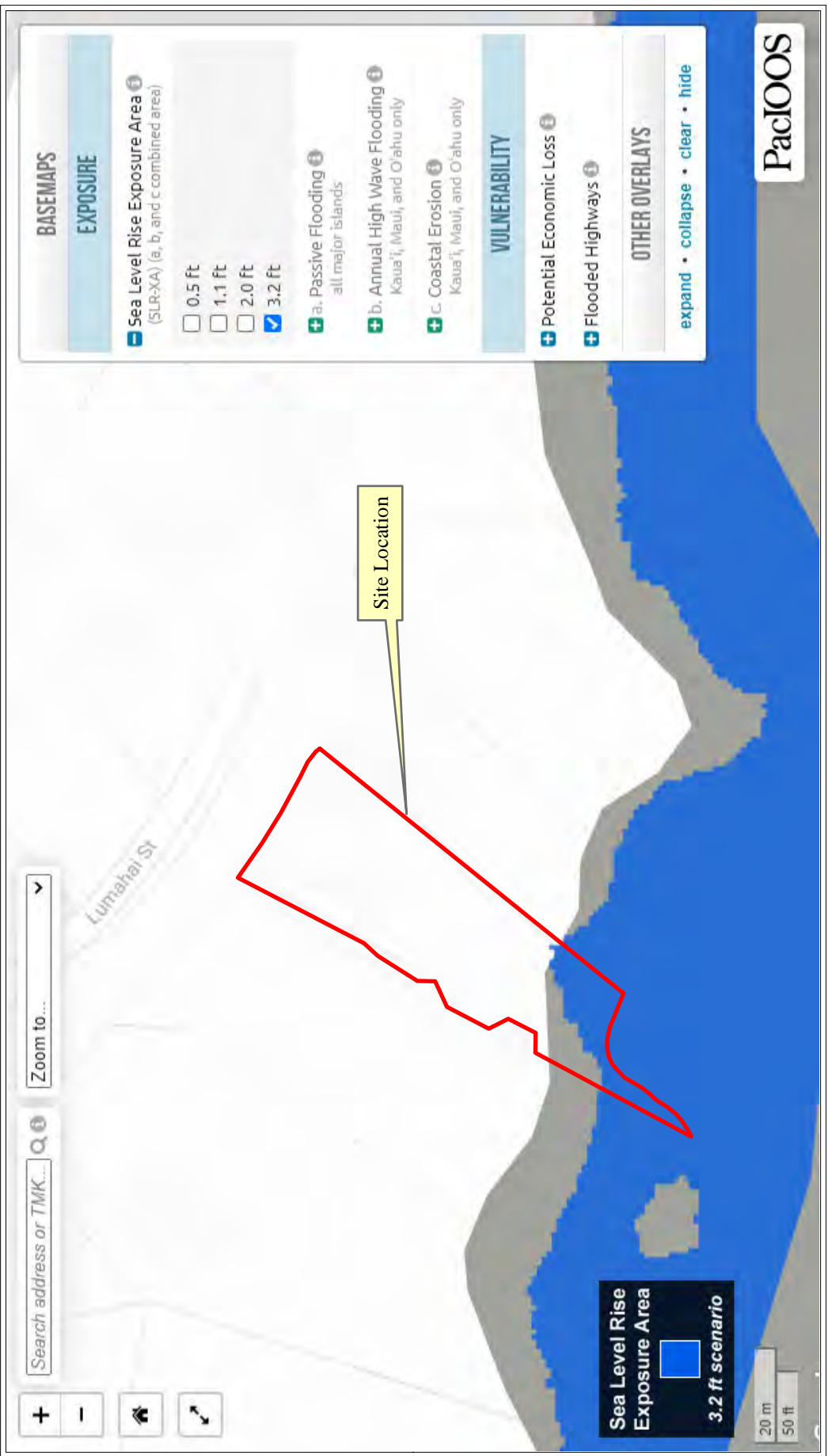
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Source: State of Hawaii Sea Level Rise Viewer		
<b>PROJECT NAME:</b> Environmental Assessment 4 Lumahai Street Honolulu, Hawaii 96825 Tax Map Key 3-9-013:32	<b>EXHIBIT TITLE:</b>	Sea Level Rise Map 0.5 feet
	<b>EXHIBIT NUMBER:</b>	3

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Source: State of Hawaii Sea Level Rise Viewer		
PROJECT NAME: Environmental Assessment 4 Lumahai Street Honolulu, Hawaii 96825 Tax Map Key 3-9-013:32	EXHIBIT TITLE:	Sea Level Rise Map 3.2 Feet
	EXHIBIT NUMBER:	3



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	PROJECT NAME: Environmental Assessment 4 Lumahai Street Honolulu, Hawaii 96825 Tax Map Key 3-9-013:32	
	EXHIBIT TITLE: Tsunami Inundation Zone Map	EXHIBIT NUMBER: 3

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#### Exhibit 4: Clean Air

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# **State of Hawaii Annual Summary 2017 Air Quality Data**



**Bruce S. Anderson, Ph.D.**  
Director of Health

State of Hawaii  
Department of Health  
March 2020

**David Y. Ige**  
Governor of Hawaii

# 2017

## Hawaii Air Quality Data

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# Section 1

## INTRODUCTION

The Department of Health, Clean Air Branch, monitors the ambient air in the State of Hawaii for various gaseous and particulate air pollutants. The U. S. Environmental Protection Agency (EPA) has set national ambient air quality standards (NAAQS) for six criteria pollutants: carbon monoxide, nitrogen dioxide, sulfur dioxide, lead, ozone, and particulate matter (PM<sub>10</sub> and PM<sub>2.5</sub>). Hawaii has also established a state ambient air standard for hydrogen sulfide. The primary purpose of the statewide monitoring network is to measure ambient air concentrations of these pollutants and ensure that these air quality standards are met. The stations are maintained and the data are collected by the Air Surveillance and Analysis Section of the State Laboratories Division.

In addition to monitoring the ambient air for criteria pollutants, the State of Hawaii also participates in the NCore multi pollutant monitoring network; the NCore station in Hawaii is located at the Kapolei monitoring station. The NCore network addresses the following objectives:

- Timely reporting of data to public by supporting AIRNow, air quality forecasting, and other public reporting mechanisms;
- Support for development of emission strategies through air quality model evaluation and other observational methods;
- Accountability of emission strategy progress through tracking long-term trends of criteria and non-criteria pollutants and their precursors;
- Support for long-term health assessments that contribute to ongoing reviews of the NAAQS;
- Compliance through establishing nonattainment/attainment areas through comparison with the NAAQS;
- Support to scientific studies ranging across technological, health, and atmospheric process disciplines;
- Support to ecosystem assessments recognizing that national air quality networks benefit ecosystem assessments and, in turn, benefit from data specifically designed to address ecosystem analyses; and
- PM<sub>2.5</sub> speciation monitoring that EPA determined to be essential for establishing a relationship between particle concentrations and adverse health effects and would provide valuable information in characterizing aerosols, determining the effectiveness of control strategies, and understanding the effects of particle pollution on atmospheric and regional haze.

Air pollution is caused by many different man-made and natural sources. There are industrial sources of pollution, such as power plants and refineries; mobile sources, such as cars, trucks, and buses; agricultural sources, such as agricultural burning; and natural sources, such as windblown dust and volcanic activity. In 2017, for the most part, the state maintained 14 air monitoring stations on 4 islands. Most commercial, industrial, and transportation activities and their associated air quality effects occur on Oahu, where 4 of

the stations are located. The monitoring stations on Maui are mainly to measure the air quality impacts from agricultural activities. The majority of stations are located on the island of Hawaii to measure air quality impacts from the volcano and geothermal energy production. The monitoring station on Kauai is mainly to measure the air quality impacts from cruise ships. The state's ambient air monitoring network is reviewed annually and relocations, additions and/or discontinuations can occur in the future as the need arises.

This report summarizes the validated air pollutant data collected at the 14 monitoring stations during calendar year 2017. Tabular summaries are provided which compare the measured concentrations of criteria pollutants with federal ambient air quality standards and of hydrogen sulfide with the state standard. The 2017 speciation data is also included in this report. Trend summaries of criteria pollutants parameters are shown graphically.

The Department of Health has a web site that displays near real-time air quality data updated throughout the day from the air monitoring stations. The data has not been reviewed for quality assurance and is subject to change but provides the public with viewing access to current air pollutant and meteorological information. To view this data online, go to <http://health.hawaii.gov/cab> and link to "Hawaii Ambient Air Quality Data."

Additionally, because emissions from the Kilauea volcano are affecting communities on the island of Hawaii on a daily basis, the Department of Health has a website dedicated to displaying short term SO<sub>2</sub> data from stations located on the island. It provides near real-time 15-minute SO<sub>2</sub> averages and advisory level guidance to help individuals protect themselves against possible health effects. To view this data online, go to [www.hiso2index.info](http://www.hiso2index.info)

To view this entire book as well as books from 2015 and 2016 online, go to: <http://health.hawaii.gov/cab> and link to "Hawaii Air Quality Data Book."

Questions or comments regarding data in this report and other air quality information should be addressed to:

Clean Air Branch	Phone: (808)586-4200
Department of Health	Fax: (808)586-4359
P.O. Box 3378	
Honolulu, Hawaii 96801-3378	

The Department of Health provides access to its programs and activities without regard to race, color, national origin (including language), age, sex, religion, or disability. Write our Affirmative Action Officer at P.O. Box 3378, Honolulu, Hawaii 96801-3378, or call (808)586-4616 (voice) within 180 days of a problem.

## Section 2

# DEFINITIONS

<i>98<sup>th</sup> Percentile Value</i>	The PM <sub>2.5</sub> 24-hour average or the maximum daily 1-hour NO <sub>2</sub> average in the year below which 98% of all values fall.
<i>99<sup>th</sup> Percentile Value</i>	The maximum daily 1-hour SO <sub>2</sub> value in the year below which 99% of all values fall.
<i>Ambient Air</i>	The general outdoor atmosphere, external to buildings, to which the general public has access.
<i>Ambient Air Quality Standard</i>	A limit in the quantity and exposure to pollutants dispersed or suspended in the ambient air. Primary standards are set to protect public health, including sensitive populations such as asthmatics, children, and the elderly. Secondary standards are set to protect public welfare including protection against visibility degradation, and damage to animals, crops, vegetation and buildings.
<i>Carbon Monoxide</i>	Carbon monoxide (CO) is a colorless, odorless, tasteless gas under atmospheric conditions. It is produced by the incomplete combustion of carbon fuels with the majority of emissions coming from transportation sources.
<i>CFR</i>	Code of Federal Regulations is the codification of the general and permanent rules published in the Federal Register by the executive departments and agencies of the Federal government. Title 40 is the Protection of the Environment.
<i>Collocated</i>	This is a procedure required for a certain percentage of PM <sub>10</sub> and PM <sub>2.5</sub> samplers in the monitoring network. Collocated samplers determine precision or variation in the PM <sub>10</sub> or PM <sub>2.5</sub> concentration measurements of identical samplers run in the same location under the same sampling conditions.
<i>Criteria Pollutants</i>	These are the six pollutants for which the EPA has established national air quality standards. The pollutants are ozone, carbon monoxide, nitrogen dioxide, sulfur dioxide, lead and particulate matter (PM <sub>10</sub> and PM <sub>2.5</sub> ).
<i>EPA</i>	The U. S. Environmental Protection Agency; established to protect human health and the natural environment.

<i>Hydrogen Sulfide</i>	Hydrogen sulfide (H <sub>2</sub> S) is a toxic, colorless gas with a characteristic “rotten egg” odor detectable at very low levels. It occurs naturally during the decomposition of organic matter, near geothermal sources and is also produced during certain industrial processes, including wastewater treatment facilities.
<i>Micron</i>	One micron is one millionth of a meter or approximately 1/25,000 of an inch.
<i>µg/m<sup>3</sup></i>	Micrograms per cubic meter. This is the measurement of air quality expressed as mass per unit volume.
<i>NAAQS</i>	National Ambient Air Quality Standards. These are pollutant standards that the EPA has established to protect public health and welfare. NAAQS have been set for carbon monoxide, nitrogen dioxide, PM <sub>10</sub> , PM <sub>2.5</sub> , ozone, sulfur dioxide, and lead. These are commonly referred to as criteria pollutants.
<i>NCore</i>	A multi-pollutant network that integrates several advanced measurement systems for particles, pollutant gases and meteorology. Most NCore stations have been operating since the formal start of the network on January 1, 2011, including Hawaii’s.
<i>Nitrogen Dioxide</i>	Nitrogen dioxide (NO <sub>2</sub> ) is a brownish, highly corrosive gas with a pungent odor. It is formed in the atmosphere from emissions of nitrogen oxides (NO <sub>x</sub> ). Sources of nitrogen oxides include electric utilities, industrial boilers, motor vehicle exhaust and combustion of fossil fuels. NO <sub>2</sub> is also a component in the atmospheric reaction that produces ground-level ozone.
<i>Ozone</i>	Ozone (O <sub>3</sub> ) is the main constituent in photochemical air pollution. It is formed in the atmosphere by a chemical reaction of nitrogen oxides (NO <sub>x</sub> ) and volatile organic compounds (VOCs) in the presence of sunlight. In the upper atmosphere, O <sub>3</sub> shields the earth from harmful ultraviolet radiation; however, at ground level, it can cause harmful effects in humans and plants.
<i>Particulate Matter</i>	This refers to any solid or liquid matter dispersed in the air. Particulate matter (PM) includes dust, soot, smoke, and liquid droplets from sources such as factories, power plants, motor vehicles, construction, agricultural activities, and fires.

<i>PM<sub>10</sub></i>	Particulate matter that is 10 microns or less in aerodynamic diameter. These are considered “coarse” particles, generally from sources such as road and windblown dust, and crushing and grinding operations.
<i>PM<sub>2.5</sub></i>	Particulate matter that is 2.5 microns or less in aerodynamic diameter. Considered “fine” particles, these are generally a result of fuel combustion such as from motor vehicles, utility generation and industrial facilities. Fine particles can also be formed when gases, such as sulfur dioxide and nitrogen dioxide, are chemically transformed into particles.
<i>ppm</i>	Parts per million is one particle in 1,000,000 other particles. It is approximately one drop in 13 gallons.
<i>SLAMS</i>	State and Local Air Monitoring Stations. The Clean Air Act requires that every state establish a network of air monitoring stations for criteria pollutants.
<i>SPM</i>	Special Purpose Monitoring stations. These are stations established to provide data for special studies in support of air program interests and activities. SPM stations supplement the SLAMS network as special circumstances require and adequate resources permit.
<i>Sulfur Dioxide</i>	Sulfur dioxide (SO <sub>2</sub> ) is a colorless gas that easily combines with water vapor forming sulfuric acid. Emissions of sulfur dioxide are largely from sources that burn fossil fuels such as coal and oil. In Hawaii, another major source of sulfur dioxide emissions is from the eruption of Kilauea Volcano on the Big Island.
<i>Vog</i>	Vog is a local term used to express volcanic smog. Vog occurs when volcanic gas and particles combine with air and sunlight to produce atmospheric haze.

## Table 2-1 State and Federal Ambient Air Quality Standards

Sources: State standards HAR §11-59; Federal standards 40 CFR Part 50

Air Pollutant	Averaging Time	Standards		
		Hawaii State Standard	Federal Primary Standard <sup>a</sup>	Federal Secondary Standard <sup>b</sup>
Carbon Monoxide (CO)	1-hour	9 ppm	35 ppm	None
	8-hour	4.4 ppm	9 ppm	
Nitrogen Dioxide (NO <sub>2</sub> )	1-hour	---	0.100 ppm	---
	Annual	0.04 ppm	0.053 ppm	
PM <sub>10</sub>	24-hour	150 µg/m <sup>3</sup>	150 µg/m <sup>3</sup>	---
	Annual <sup>c</sup>	50 µg/m <sup>3</sup>	---	
PM <sub>2.5</sub>	24-hour	---	35 µg/m <sup>3</sup>	35 µg/m <sup>3</sup>
	Annual		12 µg/m <sup>3</sup>	15 µg/m <sup>3</sup>
Ozone (O <sub>3</sub> )	8-hour	0.08 ppm	0.070 ppm	0.070 ppm
Sulfur Dioxide (SO <sub>2</sub> )	1-hour	---	0.075 ppm	---
	3-hour	0.5 ppm	---	0.5 ppm
	24-hour	0.14 ppm	---	---
	Annual	0.03 ppm	---	---
Lead (Pb)	Rolling 3-month	1.5 µg/m <sup>3</sup> <sup>d</sup>	0.15 µg/m <sup>3</sup>	0.15 µg/m <sup>3</sup>
Hydrogen Sulfide	1-hour	0.025 ppm	None	None

<sup>a</sup> **Primary Standards** set limits to protect public health, including the health of “sensitive” populations such as asthmatics, children and the elderly.

<sup>b</sup> **Secondary Standards** set limits to protect public welfare, including protection against decreased visibility, damage to animals, crops, vegetation, and buildings.

<sup>c</sup> Due to a lack of evidence linking health problems to long-term exposure to coarse particle pollution, EPA revoked the annual PM<sub>10</sub> standard effective December 17, 2006. However, the state still has an annual standard.

<sup>d</sup> The state standard is based on calendar quarter.

### Compliance with the National Ambient Air Quality Standards

**CO 1-hour:** May not be exceeded more than once per year.

**CO 8-hour:** May not be exceeded more than once per year.

**NO<sub>2</sub> 1-hour:** The 3-year average of the 98<sup>th</sup> percentile daily maximum 1-hour averages must not exceed the standard.

**NO<sub>2</sub> Annual:** Average of all 1-hour values in the year may not exceed the level of the standard.

**PM<sub>10</sub> 24-hour:** Must not be exceeded more than one day per year, after compensating for days when monitoring did not occur (estimated number of exceedances).

**PM<sub>2.5</sub> 24-hour:** The 3-year average of the 98<sup>th</sup> percentile 24-hour concentrations must not exceed the level of the standard.

**PM<sub>2.5</sub> Annual:** The 3-year average of 24-hour values must not exceed the level of the standard.

**Ozone 8-hour:** The 3-year average of the fourth highest daily maximum value must not exceed the level of the standard.

**SO<sub>2</sub> 1-hour:** The 3-year average of the 99<sup>th</sup> percentile daily maximum 1-hour averages must not exceed the standard.

**SO<sub>2</sub> 3-hour:** Not be exceeded more than once per year.

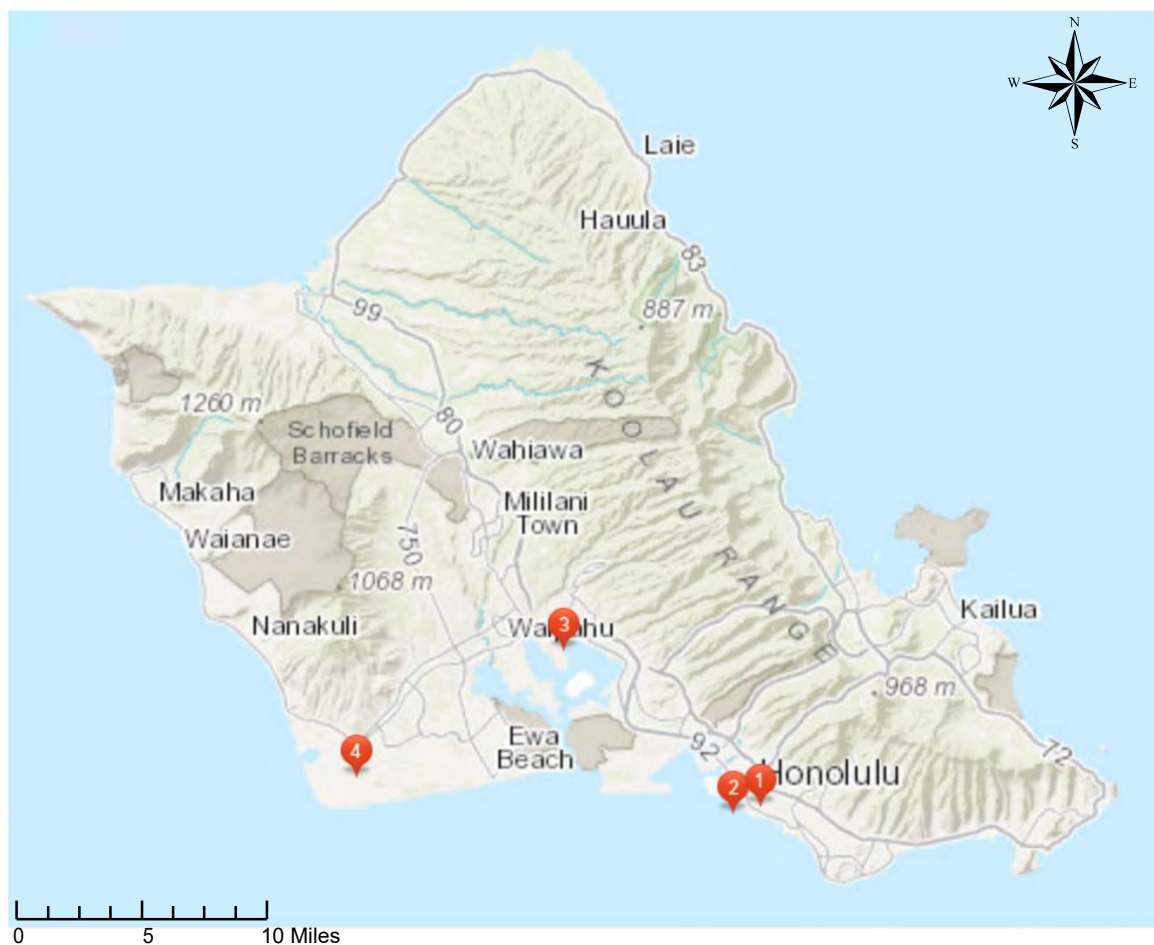
**SO<sub>2</sub> Annual:** Average of all 1-hour values in the year may not exceed the level of the standard.

**Lead:** Average of all 24-hour values in any rolling 3-month period may not exceed the level of the standard.

## Section 3

# SITE LOCATIONS AND DESCRIPTIONS


**Figure 3-1: Island of Oahu – Air Monitoring Stations**





Station	Name	Location	Pollutants/Parameters Monitored
1	Honolulu	1250 Punchbowl St.	CO, SO <sub>2</sub> , PM <sub>2.5</sub> , PM <sub>10</sub>
2	Sand Island	1039 Sand Island Pkwy.	O <sub>3</sub> , PM <sub>2.5</sub>
3	Pearl City	860 4 <sup>th</sup> St.	PM <sub>2.5</sub> , PM <sub>10</sub>
4	Kapolei	2052 Lauwiliwili St.	CO, SO <sub>2</sub> , NO <sub>2</sub>
	Kapolei NCore	2052 Lauwiliwili St.	CO trace, SO <sub>2</sub> trace, NO/NO <sub>y</sub> , Pb, O <sub>3</sub> , PM <sub>2.5</sub> , PM <sub>2.5</sub> speciation, PM <sub>10</sub> , PM <sub>10-2.5</sub> , WS/WD


The following station descriptions include latitude and longitude in decimal degrees and altitude in meters above mean sea level.



Honolulu (DH)		
	<b>Location:</b>	1250 Punchbowl St., Honolulu
	<b>Latitude:</b>	21.30758
	<b>Longitude:</b>	-157.85542
	<b>Altitude:</b>	20 m
	<b>Parameters:</b>	SO <sub>2</sub> , CO, PM <sub>10</sub> , PM <sub>2.5</sub>
	<b>Established:</b>	February 1971
	<b>Brief Description:</b>	Located in downtown Honolulu on the roof of the Department of Health building, across from the Queen's Medical Center, in a busy commercial, business and government district.

Kapolei (KA)		
	<b>Location:</b>	2052 Lauwiliwili St., Kapolei
	<b>Latitude:</b>	21.32374
	<b>Longitude:</b>	-158.08861
	<b>Altitude:</b>	17.9 m
	<b>Parameters:</b>	SO <sub>2</sub> , CO, NO <sub>2</sub> , PM <sub>10</sub> , PM <sub>2.5</sub> , PM <sub>2.5</sub> speciation, NCore
	<b>Established:</b>	July 2002
	<b>Brief Description:</b>	Located in Kapolei Business Park, southeast of Kapolei Fire Station, next to a drainage canal that separates the park from Barber's Point. Approximately 1.5 miles from Malakole Street in Campbell Industrial Park.


Pearl City (PC)		
	<b>Location:</b>	860 4 <sup>th</sup> St., Pearl City
	<b>Latitude:</b>	21.39283
	<b>Longitude:</b>	-157.96913
	<b>Altitude:</b>	23.1 m
	<b>Parameters:</b>	PM <sub>10</sub> , PM <sub>2.5</sub>
	<b>Established:</b>	May 1979
	<b>Brief Description:</b>	Located on the roof of the Leeward Health Center in a commercial, residential and light industrial area approximately 1.5 miles northwest of the Waiiau power plant and near the Pearl Harbor Naval Complex.


Sand Island (SI)		
	<b>Location:</b>	1039 Sand Island Pkwy., Honolulu
	<b>Latitude:</b>	21.30384
	<b>Longitude:</b>	-157.87117
	<b>Altitude:</b>	5.3 m
	<b>Parameters:</b>	O <sub>3</sub> , PM <sub>2.5</sub>
	<b>Established:</b>	February 1981
	<b>Brief Description:</b>	Located in a light industrial, commercial and recreational area approximately two miles downwind of downtown Honolulu near the entrance to the Sand Island State Recreation Area.


**Figure 3-2: Island of Maui – Air Monitoring Stations**



Station	Name	Location	Pollutants Monitored
1	Kihei	Hale Piilani Park	PM <sub>2.5</sub>
2	Paia	TMK (2)-2-5-005-05	PM <sub>2.5</sub>
3	Kahului	TMK (2)-3-8-007-153	PM <sub>2.5</sub>

Kihei (KH)	
	<b>Location:</b> Hale Piilani Park, Kihei
	<b>Latitude:</b> 20.780997
	<b>Longitude:</b> -156.44637
	<b>Altitude:</b> 46.5 m
	<b>Parameters:</b> PM <sub>2.5</sub>
	<b>Established:</b> February 1999
	<b>Brief Description:</b> Located in a residential community park, next to agricultural land.

Paia (PI)	
	<b>Location:</b> TMK (2)-2-5-005-05, Paia
	<b>Latitude:</b> 20.902031
	<b>Longitude:</b> -156.370344
	<b>Altitude:</b> 80.8 m
	<b>Parameters:</b> PM <sub>2.5</sub>
	<b>Established:</b> March 2014
	<b>Brief Description:</b> Located within a fenced area that contains a County of Maui water supply tank. The area is surrounded by residential and agricultural land with unharvested sugar cane fields north of the monitor (Station closed on March 31, 2017).


Kahului (KL)	
	<b>Location:</b> TMK (2)-3—8-007-153, Kahului
	<b>Latitude:</b> 20.869444
	<b>Longitude:</b> -156.492417
	<b>Altitude:</b> 55.5 m
	<b>Parameters:</b> PM <sub>2.5</sub>
	<b>Established:</b> January 2016
	<b>Brief Description:</b> Located within a fenced area off of Maulani Parkway, TMK 2-3-8-007-153. The area is surrounded primarily by residential land.


**Figure 3-3: Island of Hawaii – Air Monitoring Stations**





Station	Name	Location	Pollutants Monitored
1	Hilo	1099 Waianuenue Ave.	SO <sub>2</sub> , PM <sub>2.5</sub>
2	Mountain View	18-1235 Volcano Rd.	SO <sub>2</sub> , PM <sub>2.5</sub>
3	Puna E	TMK (3)-1-3-28-37 (Leilani)	H <sub>2</sub> S, SO <sub>2</sub>
4	Pahala	96-3150 Pikake St.	SO <sub>2</sub> , PM <sub>2.5</sub>
5	Ocean View	92-6091 Orchid Mauka Circ.	SO <sub>2</sub> , PM <sub>2.5</sub>
6	Kona	81-1043 Konawaena School Rd.	SO <sub>2</sub> , PM <sub>2.5</sub>





Hilo (HL)	
	<b>Location:</b> 1099 Waianuenue Ave., Hilo
	<b>Latitude:</b> 19.71756
	<b>Longitude:</b> -155.11053
	<b>Altitude:</b> 136.8 m
	<b>Parameters:</b> SO <sub>2</sub> , PM <sub>2.5</sub>
	<b>Established:</b> January 1997
	<b>Brief Description:</b> Located near the Hilo Medical Center, this station was established to monitor vog during “Kona” or southerly wind conditions.

Kona (KN)	
	<b>Location:</b> 81-1043 Konawaena School Rd., Kona
	<b>Latitude:</b> 19.50978
	<b>Longitude:</b> -155.91342
	<b>Altitude:</b> 517.2 m
	<b>Parameters:</b> SO <sub>2</sub> , PM <sub>2.5</sub>
	<b>Established:</b> September 2005
	<b>Brief Description:</b> Located on the upper campus of Konawaena High School, this station monitors for vog on the west side of the island of Hawaii.

Mt. View (MV)	
	<b>Location:</b> 18-1235 Volcano Rd., Mt. View
	<b>Latitude:</b> 19.57002
	<b>Longitude:</b> -155.08046
	<b>Altitude:</b> 436.5 m
	<b>Parameters:</b> SO <sub>2</sub> , PM <sub>2.5</sub>
	<b>Established:</b> December 2010
	<b>Brief Description:</b> Located on the grounds of the Mt. View Elementary School, this station was established to monitor vog during southerly wind conditions.

Ocean View (OV)	
	<b>Location:</b> 92-6091 Orchid Mauka Circle, Ocean View
	<b>Latitude:</b> 19.11756
	<b>Longitude:</b> -155.77814
	<b>Altitude:</b> 862.6 m
	<b>Parameters:</b> SO <sub>2</sub> , PM <sub>2.5</sub>
	<b>Established:</b> April 2010
	<b>Brief Description:</b> This station is located in Hawaii Ocean View Estates at the Ocean View fire station and monitors for volcanic emissions.

Pahala (PA)	
	<b>Location:</b> 96-3150 Pikake St., Pahala
	<b>Latitude:</b> 19.2039
	<b>Longitude:</b> -155.48018
	<b>Altitude:</b> 320 m
	<b>Parameters:</b> SO <sub>2</sub> , PM <sub>2.5</sub>
	<b>Established:</b> August 2007
<b>Brief Description:</b>	
The station is on the grounds of the Kau High and Pahala Elementary School, monitoring for volcanic emissions.	

Puna E (PE)	
	<b>Location:</b> 13-763 Leilani Ave., Pahoa
	<b>Latitude:</b> 19.46399
	<b>Longitude:</b> -154.89871
	<b>Altitude:</b> 207.9 m
	<b>Parameters:</b> SO <sub>2</sub> , H <sub>2</sub> S
	<b>Established:</b> March 1991
<b>Brief Description:</b>	
Located in the Leilani Estates residential subdivision, this station monitors for emissions from the geothermal energy facility approximately 1 mile to the northeast. The station also monitored for SO <sub>2</sub> emissions from the volcano during southwesterly wind conditions, until January 25, 2017, when SO <sub>2</sub> monitoring was discontinued.	

**Figure 3-4: Island of Kauai – Air Monitoring Station**



Station	Name	Location	Pollutants Monitored
1	Niumalu	2342 Hulemalu Road	SO <sub>2</sub> , NO <sub>2</sub> , PM <sub>2.5</sub>


Niumalu (NI)		
	<b>Location:</b>	2342 Hulemalu Road, Lihue
	<b>Latitude:</b>	21.9495
	<b>Longitude:</b>	-159.365
	<b>Altitude:</b>	11 m
	<b>Parameters:</b>	SO <sub>2</sub> , NO <sub>2</sub> , PM <sub>2.5</sub>
	<b>Established:</b>	April 2011
<b>Brief Description:</b>		
Located in the Niumalu residential subdivision, this station monitors for emissions from the cruise ships in Nawiliwili Harbor approximately 1.0 mile upwind.		

Table 3-1 State of Hawaii Ambient Air Monitoring Network

Pollutants Monitored and Station Type										
SITE	PM <sub>10</sub>	PM <sub>2.5</sub>	CO	O <sub>3</sub>	SO <sub>2</sub>	NO <sub>2</sub>	H <sub>2</sub> S	Lead	MONITORING OBJECTIVE	LOCATION SETTING
<b>OAHU</b>										
Honolulu	S	S	S	-	S	-	-	-	Population Exposure	Urban and Center City
Kapolei <sup>1</sup>	S	S,C	S	S	S	S	-	S,C	Population Exposure	Suburban
Pearl City	S	S	-	-	-	-	-	-	Population Exposure	Urban and Center City
Sand Island	-	S	-	S	-	-	-	-	Maximum Concentration (O <sub>3</sub> ) Transport (PM <sub>2.5</sub> )	Urban and Center City
<b>MAUI</b>										
Kihei	-	S	-	-	-	-	-	-	Source Impact (agricultural burning)	Suburban
Paia <sup>2</sup>	-	SPM	-	-	-	-	-	-	Source Impact (agricultural burning)	Neighborhood
Kahului		SPM	-	-	-	-	-	-	Source Impact (agricultural burning)	Neighborhood
<b>HAWAII</b>										
Hilo	-	SPM	-	-	S	-	-	-	Population Exposure	Suburban
Kona	-	SPM	-	-	S	-	-	-	Population Exposure (SO <sub>2</sub> )/ Maximum concentration (PM <sub>2.5</sub> )	Suburban
Mountain View	-	SPM	-	-	SPM	-	-	-	Source Impact	Suburban
Ocean View	-	SPM	-	-	SPM	-	-	-	Welfare Impact (SO <sub>2</sub> )/ Source Impact (PM <sub>2.5</sub> )	Rural
Pahala	-	SPM	-	-	SPM	-	-	-	Maximum concentration (SO <sub>2</sub> )/ Source Impact (PM <sub>2.5</sub> )	Rural
Puna E	-	-	-	-	SPM <sup>3</sup>	-	SPM	-	Source Impact (geothermal and volcano)	Suburban
<b>KAUAI</b>										
Niimalu	-	SPM		-	SPM	SPM	-	-	Source Impact (cruise ships)	Suburban

C = Collocated Site

S = (SLAMS) State and Local Air Monitoring Station

SPM = Special Purpose Monitoring Station (for monitoring vog, geothermal energy production and cruise ships)

<sup>1</sup>Includes NCore station.

<sup>2</sup>Paia was discontinued March 31, 2017.

<sup>3</sup>Monitoring for SO<sub>2</sub> was discontinued January 25, 2017.



Table 3-1 State of Hawaii Ambient Air Monitoring Network

Pollutants Monitored and Station Type										
SITE	PM <sub>10</sub>	PM <sub>2.5</sub>	CO	O <sub>3</sub>	SO <sub>2</sub>	NO <sub>2</sub>	H <sub>2</sub> S	Lead	MONITORING OBJECTIVE	LOCATION SETTING
<b>OAHU</b>										
Honolulu	S	S	S	-	S	-	-	-	Population Exposure	Urban and Center City
Kapolei <sup>1</sup>	S	S,C	S	S	S	S	-	S,C	Population Exposure	Suburban
Pearl City	S	S	-	-	-	-	-	-	Population Exposure	Urban and Center City
Sand Island	-	S	-	S	-	-	-	-	Maximum Concentration (O <sub>3</sub> ) Transport (PM <sub>2.5</sub> )	Urban and Center City
<b>MAUI</b>										
Kihei	-	S	-	-	-	-	-	-	Source Impact (agricultural burning)	Suburban
Paia <sup>2</sup>	-	SPM	-	-	-	-	-	-	Source Impact (agricultural burning)	Neighborhood
Kahului		SPM	-	-	-	-	-	-	Source Impact (agricultural burning)	Neighborhood
<b>HAWAII</b>										
Hilo	-	SPM	-	-	S	-	-	-	Population Exposure	Suburban
Kona	-	SPM	-	-	S	-	-	-	Population Exposure (SO <sub>2</sub> )/ Maximum concentration (PM <sub>2.5</sub> )	Suburban
Mountain View	-	SPM	-	-	SPM	-	-	-	Source Impact	Suburban
Ocean View	-	SPM	-	-	SPM	-	-	-	Welfare Impact (SO <sub>2</sub> )/ Source Impact (PM <sub>2.5</sub> )	Rural
Pahala	-	SPM	-	-	SPM	-	-	-	Maximum concentration (SO <sub>2</sub> )/ Source Impact (PM <sub>2.5</sub> )	Rural
Puna E	-	-	-	-	SPM <sup>3</sup>	-	SPM	-	Source Impact (geothermal and volcano)	Suburban
<b>KAUAI</b>										
Niimalu	-	SPM		-	SPM	SPM	-	-	Source Impact (cruise ships)	Suburban

C = Collocated Site

S = (SLAMS) State and Local Air Monitoring Station

SPM = Special Purpose Monitoring Station (for monitoring vog, geothermal energy production and cruise ships)

<sup>1</sup>Includes NCore station.

<sup>2</sup>Paia was discontinued March 31, 2017.

<sup>3</sup>Monitoring for SO<sub>2</sub> was discontinued January 25, 2017.

Table 3-2 Sampling Equipment at Each Monitoring Station

Monitoring Station	PM <sub>10</sub> Continuous Ambient Particulate Monitor	PM <sub>2.5</sub> Manual Particulate Monitor	PM <sub>2.5</sub> Continuous Monitor	CO Continuous Gas Filter Correlation Analyzer	SO <sub>2</sub> Continuous Pulsed Fluorescence Ambient Air Analyzer	O <sub>3</sub> Continuous UV Photometric Analyzer	NO <sub>2</sub> Continuous Chemiluminescence Analyzer	H <sub>2</sub> S Continuous Pulsed Fluorescence Ambient Air Analyzer	Lead 1 in 6 Days Total Suspended Particulate Monitor
<b>OAHU</b>									
Honolulu	■		■	■	■				
Kapolei	■	■	■	■	■	■	■		■
Pearl City	■		■						
Sand Island			■			■			
<b>MAUI</b>									
Kihei			■						
Paia			■						
Kahului			■						
<b>HAWAII</b>									
Hilo			■		■				
Kona			■		■				
Mt. View			■		■				
Ocean View			■		■				
Pahala			■		■				
Puna E					■			■	
<b>KAUAI</b>									
Niumalu			■		■		■		

Table 3-2 Sampling Equipment at Each Monitoring Station

Monitoring Station	PM <sub>10</sub> Continuous Ambient Particulate Monitor	PM <sub>2.5</sub> Manual Particulate Monitor	PM <sub>2.5</sub> Continuous Monitor	CO Continuous Gas Filter Correlation Analyzer	SO <sub>2</sub> Continuous Pulsed Fluorescence Ambient Air Analyzer	O <sub>3</sub> Continuous UV Photometric Analyzer	NO <sub>2</sub> Continuous Chemiluminescence Analyzer	H <sub>2</sub> S Continuous Pulsed Fluorescence Ambient Air Analyzer	Lead 1 in 6 Days Total Suspended Particulate Monitor
<b>OAHU</b>									
Honolulu	■		■	■	■				
Kapolei	■	■	■	■	■	■	■		■
Pearl City	■		■						
Sand Island			■			■			
<b>MAUI</b>									
Kihei			■						
Paia			■						
Kahului			■						
<b>HAWAII</b>									
Hilo			■		■				
Kona			■		■				
Mt. View			■		■				
Ocean View			■		■				
Pahala			■		■				
Puna E					■			■	
<b>KAUAI</b>									
Niumalu			■		■		■		

## Section 4

# 2017 AIR QUALITY DATA

To protect the state's air quality from degradation, the Department of Health's Clean Air Branch is responsible for regulating and monitoring pollution sources to ensure that the levels of criteria pollutants remain well below the state and federal ambient air quality standards. Data collected from the ambient air network is validated by the Air Surveillance and Analysis Section to ensure that the reported data is of good quality and meets all quality control and assurance requirements.

The monitoring stations in communities near the volcano record higher levels of SO<sub>2</sub> and PM<sub>2.5</sub>, with regular exceedances of the NAAQS for SO<sub>2</sub> and occasional exceedances of the NAAQS for PM<sub>2.5</sub>. The EPA considers the volcano a natural, uncontrollable event and therefore the state is requesting exclusion of these NAAQS exceedances from attainment/non-attainment determination.

Excluding the exceedances due to the volcano, in 2017 the State of Hawaii was in attainment of all NAAQS.

### **Explanation of Summary Tables 4-1 through 4-18:**

- Summaries are by pollutant and averaging period, with the number of occurrences exceeding the NAAQS or, in Table 4-17, the number of exceedances of the state H<sub>2</sub>S standard (there is no federal H<sub>2</sub>S standard);
- The "Maximum" is the highest and second highest valid values recorded in the year for the averaging period. For PM<sub>2.5</sub>, the maximum and 98<sup>th</sup> percentile concentrations are provided and for O<sub>3</sub>, the 4<sup>th</sup> highest daily maximum value is also displayed;
- The "Annual Mean" is the arithmetic mean of all valid values recorded in the year;
- "Possible Periods" is the total number of possible sampling periods in the year for the averaging period;
- "Valid Periods" is the total number of acceptable sampling periods after data validation;
- "Percent Recovery" represents the amount of quality data reported;
- Attainment with the NAAQS is determined according to 40 CFR 50.

### **Explanation of Tables 4-19 through 4-29:**

- For each pollutant and averaging period, the highest concentration for each month is presented;
- The month with the highest value recorded in the year for each site is highlighted.

**Table 4-1. 2017 Summary of the 24-Hour PM<sub>10</sub> Averages**

	Maximum		Annual Mean	No. of 24-hour Averages Greater than 150 µg/m <sup>3</sup>												Possible Periods	Valid Periods	Percent Recovery
	1 <sup>st</sup> High	2 <sup>nd</sup> High		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec			
<b>OAHU</b>																		
Honolulu	31	29	11.8	0	0	0	0	0	0	0	0	0	0	0	0	365	345	94.5
Kapolei	39	36	13.0	0	0	0	0	0	0	0	0	0	0	0	0	365	352	96.4
Pearl City	39	38	15.2	0	0	0	0	0	0	0	0	0	0	0	0	365	350	95.9

**Table 4-2. Attainment Determination of the 24-Hour PM<sub>10</sub> NAAQS**

Station	Exceedances in 2015	Exceedances in 2016	Exceedances in 2017	Sites in violation of the NAAQS			
Honolulu	0	0	0				0
Kapolei	0	0	0				0
Pearl City	0	0	0				0
Attainment: The standard not to be exceeded more than once per year on average over 3 years. <b>In 2017, Hawaii was in attainment with the 24-hour PM<sub>10</sub> NAAQS.</b>							

**Table 4-3. 2017 Summary of the 24-Hour PM<sub>2.5</sub> Averages: SLAMS Stations**

	Maximum		Annual Mean	No. of 24-hour Averages Greater than 35 µg/m³														
	1 <sup>st</sup> High	98 <sup>th</sup> %	All Hours	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Possible Periods	Valid Periods	Percent Recovery
<b>OAHU</b>																		
Honolulu	16.0	9.8	3.0	0	0	0	0	0	0	0	0	0	0	0	0	365	355	97.3
Kapolei	15.5	9.6	4.3	0	0	0	0	0	0	0	0	0	0	0	0	365	312	85.5
Pearl City	18.2	14.1	4.4	0	0	0	0	0	0	0	0	0	0	0	0	365	358	98.1
Sand Island	16.1	10.0	3.0	0	0	0	0	0	0	0	0	0	0	0	0	365	354	97.0
<b>MAUI</b>																		
Kihei	29.1	11.3	4.1	0	0	0	0	0	0	0	0	0	0	0	0	365	349	95.6

**Table 4-4. Attainment Determination of the 24-Hour PM<sub>2.5</sub> NAAQS: SLAMS Stations**

Station	2015 98 <sup>th</sup> value	2016 98 <sup>th</sup> value	2017 98 <sup>th</sup> value	3-Year Average	Sites in violation of the NAAQS	
Honolulu	10	11	10	10		0
Kapolei	14	11 <sup>1</sup>	10 <sup>1</sup>	12		0
Pearl City	11	12	14	12		0
Sand Island	12	13	10	12		0
Kihei	13	12	11	12		0

Attainment: The 3-year average of the 98<sup>th</sup> percentile values must be less than or equal to 35 µg/m<sup>3</sup>.  
**In 2017, Hawaii was in attainment with the 24-hour PM<sub>2.5</sub> NAAQS.**

<sup>1</sup>Does not meet summary criteria, <75% data recovery in one or more quarters.

**Table 4-5. Attainment Determination of the Annual PM<sub>2.5</sub> NAAQS: SLAMS Stations**

Station	2015 Ann. Avg.	2016 Ann. Avg.	2017 Ann. Avg.	3-Year Average	Sites in violation of the NAAQS	
Honolulu	3.7	2.1	3.0	2.9		0
Kapolei	4.1	4.0 <sup>1</sup>	4.3 <sup>1</sup>	4.1		0
Pearl City	5.2	2.6	4.4	4.1		0
Sand Island	5.4	4.0	3.0	4.1		0
Kihei	4.7	3.7	4.1	4.2		0

Attainment: The 3-year average of annual mean values must be less than 15 µg/m<sup>3</sup>.  
**In 2017, Hawaii was in attainment with the annual PM<sub>2.5</sub> NAAQS.**

<sup>1</sup>Does not meet summary criteria, <75% data recovery in one or more quarters.

**Table 4-6. 2017 Summary of the 24-Hour PM<sub>2.5</sub> Averages: SPM Stations**

	Maximum		Annual Mean	No. of 24-hour Averages Greater than 35 µg/m³															
	1 <sup>st</sup> High	98 <sup>th</sup> %		All Hours	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Possible Periods	Valid Periods	Percent Recovery
<b>HAWAII</b>																			
Hilo	34.1	23.4	9.6	0	0	0	0	0	0	0	0	0	0	0	0	0	365	357	97.8
Kona	26.9	23.8	9.3	0	0	0	0	0	0	0	0	0	0	0	0	0	365	339	92.9
Mt. View <sup>1</sup>	15.2	10.9	2.5	-	-	0	0	0	0	0	0	0	0	0	0	0	365	253	69.3
Ocean View	25.5	23.5	10.9	0	0	0	0	0	0	0	0	0	0	0	0	0	365	358	98.1
Pahala	21.1	13.9	5.1	0	0	0	0	0	0	0	0	0	0	0	0	0	365	355	97.3
<b>KAUAI</b>																			
Niimalu	13.2	9.0	2.6	0	0	0	0	0	0	0	0	0	0	0	0	0	365	350	95.9
<b>MAUI</b>																			
Kahului	13.4	9.9	4.2	0	0	0	0	0	0	0	0	0	0	0	0	0	365	322	88.2
Paia <sup>2</sup>	14.2	13.8	4.6	0	0	0	-	-	-	-	-	-	-	-	-	-	90	90	100.0
The special purpose stations on Hawaii island were established to monitor ambient air concentrations of PM <sub>2.5</sub> from volcanic emissions. The special purpose station on Kauai was established to monitor emissions from cruise ships. The special purpose stations on Maui were established to monitor emissions from agricultural burning.																			

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<sup>1</sup>Does not meet summary criteria, <75% data recovery in one or more quarters.

<sup>2</sup>Paia was closed March 31, 2017.

**Table 4-7. 2017 Summary of the 8-Hour O<sub>3</sub> Averages**

	Maximum			Annual Mean	No. of Daily Maximum 8-Hour Averages Greater than 0.070 ppm														
	1 <sup>st</sup> High	2 <sup>nd</sup> High	4 <sup>th</sup> High	All Hours	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Possible Periods	Valid Periods	Percent Recovery
OAHU																			
Sand Island	0.050	0.050	0.049	0.029	0	0	0	0	0	0	0	0	0	0	0	0	8755	8080	92.3
Kapolei	0.052	0.051	0.049	0.030	0	0	0	0	0	0	0	0	0	0	0	0	8755	7435	84.9

**Table 4-8. Attainment Determination of the 8-Hour O<sub>3</sub> NAAQS**

Station	2015 4 <sup>th</sup> highest	2016 4 <sup>th</sup> highest	2017 4 <sup>th</sup> highest	3-Year Average	Site in violation of the NAAQS
Sand Island	0.049	0.048	0.049	0.049	0
Kapolei	0.049	0.048	0.049	0.049	0
Attainment: The 3-year average of the annual 4 <sup>th</sup> highest daily maximum 8-hour average must be less than or equal to 0.070 ppm. <b>In 2017, Hawaii was in attainment with the 8-hour O<sub>3</sub> NAAQS.</b>					

**Table 4-9. 2017 Summary of the 1-Hour and Annual NO<sub>2</sub> Averages**

	Maximum 1-hr		Annual Mean	No. of Daily Maximum 1-Hour Averages Greater than 0.100 ppm												Valid Periods	Percent Recovery
	1 <sup>st</sup> High	98 <sup>th</sup> %	All Hours	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Possible Periods	
<b>OAHU</b>	<b>SLAMS stations</b>																
Kapolei	0.041	0.033	0.004	0	0	0	0	0	0	0	0	0	0	0	0	8760	94.2
<b>KAUAI</b>	<b>SPM Station</b>																
Niimalu <sup>1</sup>	0.038	0.031	0.002	0	0	0	0	0	0	0	0	0	0	0	0	8760	68.3 <sup>1</sup>
Attainment of the annual NO <sub>2</sub> NAAQS: The annual mean shall not exceed 0.053 ppm. <b>In 2017, Hawaii was in attainment with the annual NO<sub>2</sub> NAAQS.</b>																	

<sup>1</sup>Does not meet summary criteria, <75% data recovery in one or more quarters.

**Table 4-10. Attainment Determination of the 1-Hour NO<sub>2</sub> NAAQS**

Station	2015 98 <sup>th</sup> value	2016 98 <sup>th</sup> value	2017 98 <sup>th</sup> value	3-Year Average	Site in violation of the NAAQS
Kapolei	0.022	0.029	0.033	0.028	0
Attainment: The 3-year average of the 98 <sup>th</sup> percentile values must be less than or equal to 0.100 ppm. <b>In 2017, Hawaii was in attainment with the 1-hour NO<sub>2</sub> NAAQS.</b>					



#### 4-11. 2017 Summary of the 1-Hour SO<sub>2</sub> Averages

	Maximum		Annual Mean	No. of 1-hour Averages Greater than 0.075 ppm												Possible Periods	Valid Periods	Percent Recovery
	1 <sup>st</sup> High	99 <sup>th</sup> %		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec			
<b>OAHU</b>	<b>SLAMS Stations</b>																	
Honolulu	0.008	0.004	0.000	0	0	0	0	0	0	0	0	0	0	0	0	8760	8066	92.1
Kapolei	0.012	0.008	0.001	0	0	0	0	0	0	0	0	0	0	0	0	8760	8234	94.0
<b>HAWAII</b>	<b>SPM Stations (see NOTE)</b>																	
Hilo	0.668	0.359	0.005	6	3	2	2	1	0	0	1	1	2	0	1	8760	8068	92.1
Kona	0.146	0.041	0.004	1	0	0	0	0	0	0	0	0	0	0	0	8760	8580	97.9
Mt. View <sup>1</sup>	0.503	0.269	0.003	0	0	4	3	1	0	0	0	0	4	0	3	8760	7252	82.8
Ocean View	0.739	0.480	0.016	13	11	14	14	17	7	8	6	7	5	9	12	8760	8556	97.7
Pahala	0.858	0.674	0.035	25	22	15	15	23	20	23	19	17	15	17	18	8760	8416	96.1
Puna E <sup>2</sup>	0.012	0.012	0.003	0	-	-	-	-	-	-	-	-	-	-	-	600	586	97.7
<b>KAUAI</b>	<b>SPM Station</b>																	
Niimalu	0.003	0.002	0.001	0	0	0	0	0	0	0	0	0	0	0	0	8760	8164	93.2

Attainment: The 3-year average of the 99<sup>th</sup> percentile values must be less than or equal to 0.075 ppm. Effective June 2, 2010.

**In 2017, Hawaii was in attainment with the 1-hour SO<sub>2</sub> NAAQS (SLAMS stations only).**

NOTE: The SPM stations on Hawaii Island were established to monitor ambient air concentrations of SO<sub>2</sub> from volcanic emissions. Although Hilo and Kona stations are designated SLAMS, the values are still mostly attributed to volcanic emissions. Volcanic eruptions are considered natural events and therefore EPA may exclude the exceedances of the 1-hour NAAQS from attainment determinations. The SPM station on Kauai was established to monitor emissions from cruise ships.

<sup>1</sup>Does not meet summary criteria, <75% data recovery in one or more quarters.

<sup>2</sup>SO<sub>2</sub> monitoring for Puna E was discontinued January 25, 2017.

**Table 4-12. Attainment Determination of the 1-Hour SO<sub>2</sub> NAAQS: SLAMS Stations**

	2015 99 <sup>th</sup> value	2016 99 <sup>th</sup> value	2017 99 <sup>th</sup> value	3-Year Average	Violation of the NAAQS
<b>OAHU SLAMS stations</b>					N= NO Y= YES
Honolulu	0.010	0.007	0.004	0.007	N
Kapolei	0.013	0.008	0.008	0.010	N
<b>HAWAII SPM stations (SEE note)</b>					
Hilo	0.236	0.313	0.359	0.303	Y
Kona	0.031	0.044 <sup>1</sup>	0.041	0.039	N
Mt. View	0.276	0.251 <sup>1</sup>	0.269	0.265	Y
Ocean View	0.382	0.532	0.480	0.465	Y
Pahala	0.496	0.558	0.674	0.576	Y
Puna E <sup>2</sup>	0.015	0.041	0.012 <sup>2</sup>	0.023	N
<b>KAUAI SPM station</b>					
Niimalu	0.014	0.008 <sup>1</sup>	0.002	0.008	N

Attainment: The 3-year average of the 99<sup>th</sup> percentile values must be less than or equal to 0.075 ppm. Effective June 2, 2010.  
**In 2017, Hawaii was in attainment with the 1-hour SO<sub>2</sub> NAAQS (SLAMS stations only).**

NOTE: The SPM stations on Hawaii Island were established to monitor ambient air concentrations of SO<sub>2</sub> from volcanic emissions. Although Hilo and Kona stations are designated SLAMS, the values are still mostly attributed to volcanic emissions. Volcanic eruptions are considered natural events and therefore EPA may exclude the exceedances of the 1-hour NAAQS from attainment determinations. The SPM station on Kauai was established to monitor emissions from cruise ships.

<sup>1</sup>Does not meet summary criteria, <75% data recovery in one or more quarters.

<sup>2</sup>SO<sub>2</sub> monitoring for Puna E was discontinued January 25, 2017.

**Table 4-13. 2017 Summary of the 3-Hour SO<sub>2</sub> Averages**

	Maximum		Annual Mean	No. of 3-hour Averages Greater than 0.5 ppm												Possible Periods	Valid Periods	Percent Recovery
	1 <sup>st</sup> High	2 <sup>nd</sup> High	All Hours	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec			
<b>OAHU</b>	<b>SLAMS stations</b>																	
Honolulu	0.004	0.004	0.000	0	0	0	0	0	0	0	0	0	0	0	0	2920	2633	90.2
Kapolei	0.006	0.006	0.001	0	0	0	0	0	0	0	0	0	0	0	0	2920	2667	91.3
<b>HAWAII</b>	<b>SPM stations (see NOTE)</b>																	
Hilo	0.565	0.322	0.005	1	0	0	0	0	0	0	0	0	0	0	0	2920	2616	89.6
Kona	0.091	0.074	0.004	0	0	0	0	0	0	0	0	0	0	0	0	2920	2749	94.1
Mt. View <sup>1</sup>	0.329	0.174	0.004	0	0	0	0	0	0	0	0	0	0	0	0	2920	2318	79.4
Ocean View	0.563	0.367	0.016	0	1	0	0	0	0	0	0	0	0	0	0	2920	2741	93.9
Pahala	0.594	0.483	0.035	1	0	0	0	0	0	0	0	0	0	0	0	2920	2713	92.9
Puna E <sup>2</sup>	0.008	0.007	0.003	0	-	-	-	-	-	-	-	-	-	-	-	200	186	93.0
<b>KAUAI</b>	<b>SPM station</b>																	
Niumalu	0.003	0.002	0.001	0	0	0	0	0	0	0	0	0	0	0	0	2920	2678	91.7

Attainment: 3-hour values not to exceed 0.5 ppm more than once per year.

**In 2017, Hawaii was in attainment with the 3-hour SO<sub>2</sub> NAAQS (SLAMS stations only).**

NOTE: The SPM stations on Hawaii island were established to monitor ambient air concentrations of SO<sub>2</sub> from volcanic emissions. Although Hilo and Kona stations are designated SLAMS, the values are still mostly attributed to volcanic emissions. Volcanic eruptions are considered natural events and therefore EPA may exclude the exceedances of the 3-hour NAAQS from attainment determinations.

<sup>1</sup>Does not meet summary criteria, <75% data recovery in one or more quarters.

<sup>2</sup>SO<sub>2</sub> monitoring for Puna E was discontinued January 25, 2017.

**Table 4-14. 2017 Summary of the 24-Hour and Annual SO<sub>2</sub> Averages**

	Maximum		Annual Mean	No. of 24-hour Averages Greater than 0.140 ppm														
	1 <sup>st</sup> High	2 <sup>nd</sup> High	All Hours	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Possible Periods	Valid Periods	Percent Recovery
OAHU	SLAMS Stations																	
Honolulu	0.002	0.002	0.000	0	0	0	0	0	0	0	0	0	0	0	0	365	339	92.9
Kapolei	0.003	0.003	0.001	0	0	0	0	0	0	0	0	0	0	0	0	365	353	96.7
HAWAII	SPM Stations (see NOTE)																	
Hilo	0.110	0.095	0.005	0	0	0	0	0	0	0	0	0	0	0	0	365	357	97.8
Kona	0.029	0.015	0.004	0	0	0	0	0	0	0	0	0	0	0	0	365	365	100.0
Mt. View <sup>1</sup>	0.080	0.053	0.003	0	0	0	0	0	0	0	0	0	0	0	0	365	306	83.8
Ocean View	0.136	0.101	0.016	0	0	0	0	0	0	0	0	0	0	0	0	365	365	100.0
Pahala	0.153	0.141	0.035	0	0	0	1	0	0	0	0	0	0	0	0	365	360	98.6
Puna E <sup>2</sup>	0.006	0.004	0.003	0	-	-	-	-	-	-	-	-	-	-	-	25	25	100.0
KAUAI	SPM Station																	
Niumalu	0.002	0.002	0.001	0	0	0	0	0	0	0	0	0	0	0	0	365	338	92.6

Attainment: 24-hour values not to exceed 0.14 ppm more than once per year.

**In 2017, Hawaii was in attainment of the state 24-hour SO<sub>2</sub> standard (SLAMS stations only).**

NOTE: The SPM stations on Hawaii island were established to monitor ambient air concentrations of SO<sub>2</sub> from volcanic emissions. Although Hilo and Kona stations are designated SLAMS, the values are still mostly attributed to volcanic emissions. Volcanic eruptions are considered natural events and therefore EPA may exclude the exceedances of the 24-hour NAAQS from attainment determinations.

Attainment: Annual average (from SLAMS stations only) not to exceed 0.03 ppm.

**In 2017, Hawaii was in attainment of the state annual SO<sub>2</sub> standard.**

NOTE: The SPM stations on Hawaii island were established to monitor ambient air concentrations of SO<sub>2</sub> from volcanic emissions. Although Hilo and Kona stations are designated SLAMS, the values are still mostly attributed to volcanic emissions. Volcanic eruptions are considered natural events and therefore EPA may exclude the exceedances of the annual NAAQS from attainment determinations.

<sup>1</sup>Does not meet summary criteria, <75% data recovery in one or more quarters.

<sup>2</sup>SO<sub>2</sub> monitoring for Puna E was discontinued January 25, 2017.

**Table 4-15. 2017 Summary of the 1-Hour CO Averages**

	Maximum		Annual Mean	No. of 1-hour Averages Greater than 35 ppm												Valid Periods	Percent Recovery
	1 <sup>st</sup> High	2 <sup>nd</sup> High		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec		
<b>OAHU</b>	<b>SLAMS stations</b>																
Honolulu	1.4	1.3	0.5	0	0	0	0	0	0	0	0	0	0	0	0	8156	93.1
Kapolei	1.7	1.7	0.2	0	0	0	0	0	0	0	0	0	0	0	0	8207	93.7
Attainment: 1-hour values not to exceed 35 ppm more than once per year. <b>In 2017, Hawaii was in attainment with the 1-hour CO NAAQS.</b>																	

**Table 4-16. 2017 Summary of the 8-Hour CO Averages**

	Maximum		Annual Mean	No. of 8-hour Averages Greater than 9 ppm												Valid Periods	Percent Recovery
	1 <sup>st</sup> High	2 <sup>nd</sup> High		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec		
<b>OAHU</b>	<b>SLAMS stations</b>																
Honolulu	0.9	0.9	0.5	0	0	0	0	0	0	0	0	0	0	0	0	7858	89.8
Kapolei	1.1	1.0	0.2	0	0	0	0	0	0	0	0	0	0	0	0	7968	91.0
Attainment: 8-hour values not to exceed 9 ppm more than once per year. <b>In 2017, Hawaii was in attainment with the 8-hour CO NAAQS.</b>																	

**Table 4-17. 2017 Summary of the 1-Hour H<sub>2</sub>S Averages (State Standard)**

	Maximum		Annual Mean	No. of 1-hour Averages Greater than 0.025 ppm														
	1 <sup>st</sup> High	2 <sup>nd</sup> High	All Hours	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Possible Periods	Valid Periods	Percent Recovery
HAWAII																		
Puna E	0.002	0.002	0.001	0	0	0	0	0	0	0	0	0	0	0	0	8264	8760	94.3
Attainment of the state standard: 1-hour values not to exceed 0.025 ppm. In 2017, Hawaii was in attainment of the state 1-hour H <sub>2</sub> S standard.																		

**Table 4-18. 2017 Summary of the Rolling 3-Month Lead Averages**

	Maximum		Annual Mean	No. of 3-Month Averages Greater than 0.15 µg/m³												Possible Periods	Valid Periods	Percent Recovery
				Rolling 3-Month period ending in the month of														
	1 <sup>st</sup> High	2 <sup>nd</sup> High		All Hours	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov			
HAWAII																		
Kapolei	0.036	0.002	0.001	0	0	0	0	0	0	0	0	0	0	0	0	61	57	93.4
Attainment: Maximum 3-month average concentration for a 3-year period must be less than or equal to 0.15 µg/m³.																		
Note: Sampling for lead conducted 1 in 6 days. Sampling began 1/1/2012.																		

**Table 4-19. 2017 Monthly Maximum of 24-Hour PM<sub>10</sub> Values (µg/m<sup>3</sup>)**

*The state and federal 24-hr PM<sub>10</sub> standard is 150 µg/m<sup>3</sup>*

The month with the highest value in the year is highlighted

Station	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Honolulu	31	29	21	23	18	18	19	17	18	18	16	26
Kapolei	39	36	22	22	20	20	18	18	17	19	24	27
Pearl City	39	34	26	26	22	20	21	18	20	24	23	27

**Table 4-20. 2017 Monthly Maximum of 24-Hour PM<sub>2.5</sub> Values (µg/m<sup>3</sup>)**

The month with the highest value in the year is highlighted      The federal 24-hr PM<sub>2.5</sub> standard is 35 µg/m<sup>3</sup>

Station	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
<b>SLAMS Stations</b>												
Honolulu	10.2	16.0	15.7	9.0	6.1	5.1	4.6	4.9	3.8	14.4	10.7	8.9
Kapolei <sup>1</sup>	5.2	11.0	15.5	9.5	6.6	6.0	5.5	5.7	6.9	13.7	12.9	9.6
Pearl City	15.6	16.2	18.2	8.9	6.5	5.0	5.2	6.0	8.2	14.3	16.1	13.4
Sand Island	11.2	14.9	16.1	6.7	4.8	3.6	4.4	5.6	6.1	13.8	9.7	7.7
Kihei	26.2	15.8	12.1	7.1	9.0	29.1	10.1	5.1	6.4	10.9	11.3	10.1
<b>SPM Stations</b>												
Niimalu (cruise ships)	13.2	9.3	10.2	7.7	6.8	6.3	11.2	6.9	3.0	5.9	7.1	11.1
Hilo (volcano)	25.0	34.1	25.5	24.1	20.1	21.4	12.2	8.7	8.2	14.3	10.1	14.5
Kahului <sup>1</sup>	3.7	13.4	6.5	8.0	8.1	7.2	8.5	9.7	8.5	11.2	13.0	10.0
Kona (volcano)	26.9	26.2	20.0	22.2	16.2	12.2	8.3	10.5	10.2	10.1	11.8	13.1
Mt. View (volcano) <sup>1</sup>	-	-	4.7	11.1	6.6	6.2	5.7	1.9	5.3	13.0	11.5	15.2
Ocean View (volcano)	25.5	24.7	23.5	21.3	7.6	12.2	14.7	15.7	19.4	18.6	17.8	15.5
Pahala (volcano)	21.1	15.5	13.9	12.3	7.5	7.6	11.6	7.5	10.6	7.5	13.2	15.3
Paia (cane burning) <sup>2</sup>	13.8	14.2	13.5	-	-	-	-	-	-	-	-	-

<sup>1</sup>Does not meet summary criteria, <75% data recovery in one or more quarters.

<sup>2</sup>Paia was discontinued March 31, 2017.

**Table 4-21. 2017 Monthly Maximum of 1-Hour NO<sub>2</sub> Values (ppm)**

The month with the highest value in the year is highlighted *The federal 1-hour standard for NO<sub>2</sub> is 0.100 ppm*

Station	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Kapolei	0.041	0.038	0.028	0.027	0.032	0.017	0.014	0.017	0.024	0.030	0.026	0.030
Niimalu <sup>1</sup>	0.032	0.032	-	0.020	0.029	0.016	0.016	0.014	0.020	0.002	0.035	0.038

<sup>1</sup>Does not meet summary criteria, <75% data recovery in one or more quarters.

**Table 4-22. 2017 Monthly Maximum of 1-Hour CO Values (ppm)**

The month with the highest value in the year is highlighted *The federal 1-hr CO standard is 35 ppm, the state standard is 9ppm*

Station	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Honolulu	1.4	1.0	1.1	0.9	1.1	0.5	0.6	0.8	1.0	1.0	1.0	0.9
Kapolei	0.7	0.7	0.7	0.4	0.1	0.5	0.6	0.7	0.6	0.8	0.7	1.7

**Table 4-23. 2017 Monthly Maximum of 8-Hour CO Values (ppm)**

The month with the highest value in the year is highlighted *The federal 8-hr CO standard is 9 ppm, the state standard is 4.4 ppm*

Station	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Honolulu	0.9	0.7	0.8	0.8	0.9	0.4	0.6	0.7	0.7	0.7	0.6	0.6
Kapolei	0.5	0.4	0.4	0.3	-1.0	0.4	0.5	0.5	0.5	0.6	0.5	1.1



#### 4-24. 2017 Monthly Maximum of 8-Hour O<sub>3</sub> Values (ppm)

The month with the highest value in the year is highlighted

The federal 8-hr O<sub>3</sub> standard is 0.070 ppm

Station	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Sand Island	0.047	0.050	0.042	0.050	0.044	0.037	0.029	0.030	0.034	0.045	0.046	0.046
Kapolei NCore	0.049	0.052	0.048	0.052	0.045	0.034	0.030	0.029	0.033	0.041	0.044	0.046

**Table 4-25. 2017 Monthly Maximum of 1-Hour SO<sub>2</sub> Values (ppm)**

The month with the highest value in the year is highlighted

The federal 1-hr SO<sub>2</sub> standard is 0.075 ppm (75 ppb)

Station	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
<b>SLAMS Stations</b>												
Honolulu	0.004	0.003	0.006	0.002	0.001	0.001	0.000	0.001	0.001	0.004	0.008	0.002
Kapolei	0.004	0.010	0.004	0.006	0.007	0.002	0.003	0.003	0.012	0.005	0.008	0.006
<b>SPM Stations (see NOTE)</b>												
Niimalu (cruise ships)	0.003	0.002	0.002	0.002	0.002	0.000	0.000	0.000	0.000	0.001	0.001	0.001
Hilo (volcano)	0.667	0.435	0.356	0.359	0.082	0.023	0.040	0.082	0.098	0.281	0.049	0.131
Kona (volcano)	0.146	0.041	0.015	0.026	0.014	0.017	0.021	0.018	0.029	0.024	0.048	0.033
Mt. View (volcano) <sup>1</sup>	-	0.041	0.464	0.503	0.304	0.002	0.012	0.028	0.060	0.190	0.057	0.126
Ocean View (volcano)	0.394	0.739	0.424	0.364	0.260	0.281	0.262	0.202	0.247	0.573	0.170	0.316
Pahala (volcano)	0.827	0.581	0.589	0.858	0.340	0.337	0.379	0.333	0.515	0.444	0.674	0.39
Puna E (volcano) <sup>2</sup>	0.0115	-	-	-	-	-	-	-	-	-	-	-

NOTE: The SPM stations on Hawaii Island were established to monitor ambient air concentrations of SO<sub>2</sub> from volcanic emissions. Although Hilo and Kona stations are designated SLAMS, the values are still mostly attributed to volcanic emissions. Volcanic eruptions are considered natural events and therefore EPA may exclude the exceedances of the 1-hour NAAQS from attainment determinations.

<sup>1</sup>Does not meet summary criteria, <75% data recovery in one or more quarters.

<sup>2</sup>SO<sub>2</sub> monitoring for Puna E was discontinued January 25, 2017.

**Table 4-26. 2017 Monthly Maximum of 3-Hour SO<sub>2</sub> Values (ppm)**

The month with the highest value in the year is highlighted *The state and federal 3-hr SO<sub>2</sub> standard is 0.5 ppm*

Station	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
<b>SLAMS Stations</b>												
Honolulu	0.003	0.002	0.004	0.001	0.001	0.001	0.000	0.001	0.001	0.003	0.004	0.002
Kapolei	0.003	0.005	0.003	0.005	0.003	0.002	0.002	0.003	0.006	0.004	0.006	0.004
<b>SPM Stations (see NOTE)</b>												
Niimalu (cruise ships)	0.003	0.002	0.002	0.002	0.001	0.000	0.000	0.000	0.000	0.001	0.001	0.001
Hilo (volcano)	0.565	0.242	0.244	0.185	0.053	0.005	0.023	0.051	0.068	0.161	0.036	0.063
Kona (volcano)	0.091	0.026	0.012	0.022	0.011	0.014	0.018	0.015	0.022	0.022	0.040	0.031
Mt. View (volcano) <sup>1</sup>	-	0.030	0.329	0.174	0.127	0.001	0.007	0.008	0.042	0.107	0.034	0.092
Ocean View (volcano)	0.313	0.563	0.349	0.192	0.167	0.140	0.181	0.134	0.187	0.319	0.082	0.226
Pahala (volcano)	0.594	0.430	0.425	0.483	0.243	0.232	0.313	0.257	0.229	0.303	0.408	0.208
Puna E (volcano) <sup>2</sup>	0.008	-	-	-	-	-	-	-	-	-	-	-

NOTE: The SPM stations on Hawaii Island were established to monitor ambient air concentrations of SO<sub>2</sub> from volcanic emissions. Volcanic eruptions are considered natural events and therefore EPA may exclude the exceedances of the 3-hour NAAQS from attainment determinations.

<sup>1</sup>Does not meet summary criteria, <75% data recovery in one or more quarters.

<sup>2</sup>SO<sub>2</sub> monitoring for Puna E was discontinued January 25, 2017.

**Table 4-27. 2017 Monthly Maximum of 24-Hour SO<sub>2</sub> Values (ppm)**

The month with the highest value in the year is highlighted *The state 24-hr SO<sub>2</sub> standard is 0.14 ppm*

Station	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
<b>SLAMS Stations</b>												
Honolulu	0.002	0.001	0.002	0.001	0.001	0.001	0.000	0.000	0.001	0.001	0.001	0.001
Kapolei	0.001	0.001	0.001	0.001	0.001	0.002	0.002	0.002	0.003	0.003	0.002	0.001
<b>SPM Stations (see NOTE)</b>												
Niimalu (cruise ships)	0.002	0.002	0.002	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.001
Hilo (volcano)	0.110	0.095	0.047	0.0477	0.011	0.004	0.008	0.014	0.020	0.032	0.009	0.020
Kona (volcano)	0.029	0.009	0.006	0.008	0.004	0.006	0.005	0.007	0.007	0.009	0.015	0.013
Mt. View (volcano) <sup>1</sup>	-	0.005	0.080	0.053	0.021	0.001	0.002	0.004	0.012	0.026	0.011	0.032
Ocean View (volcano)	0.096	0.136	0.101	0.051	0.040	0.043	0.0349	0.047	0.046	0.046	0.023	0.063
Pahala (volcano)	0.141	0.102	0.099	0.153	0.060	0.060	0.118	0.076	0.097	0.100	0.125	0.078
Puna E (volcano) <sup>2</sup>	0.006	-	-	-	-	-	-	-	-	-	-	-

NOTE: The SPM stations on Hawaii Island were established to monitor ambient air concentrations of SO<sub>2</sub> from volcanic emissions. Volcanic eruptions are considered natural events and therefore EPA may exclude the exceedances of the 24-hour NAAQS from attainment determinations.

<sup>1</sup>Does not meet summary criteria, <75% data recovery in one or more quarters.

<sup>2</sup>SO<sub>2</sub> monitoring for Puna E was discontinued January 25, 2017.

**Table 4-28. 2017 Monthly Maximum of 1-Hour H<sub>2</sub>S Values (ppm)**

The month with the highest value in the year is highlighted *The state 1-hour H<sub>2</sub>S standard is .025 ppm*

Station	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Puna E	0.002	0.001	0.002	0.001	0.001	0.001	0.001	0.002	0.001	0.002	0.002	0.002

**Table 4-29. 2017 Monthly Maximum of Rolling 3-Month Lead Values (µg/m<sup>3</sup>)**

The month with the highest value in the year is highlighted *The federal rolling 3-month lead standard is 0.15 µg/m<sup>3</sup>*

Station	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Kapolei NCore (1 in 6 days)	0.036	0.001	0.001	0.001	0.001	0.001	0.001	0.000	0.002	0.001	0.000	0.000

## Section 5

# 2017 PM<sub>2.5</sub> SPECIATION DATA

Atmospheric aerosols are solid or liquid particles suspended in air that come directly from a variety of sources (primary) or are formed by chemical reactions (secondary). Primary and secondary particles tend to have long lifetimes in the atmosphere and can travel long distances, up to hundreds or perhaps thousands of miles. Sources include dust from roads, construction, and agriculture; combustion particles from motor vehicles, electric utilities and agricultural burning; and particles from natural sources such as the ocean or volcano.

Most of the PM<sub>2.5</sub> is a combination of the following components: sulfates, nitrates, ammonium, elemental carbon, organic compounds, water and metals. The EPA selected target particulates of interest based on data use objectives, primary constituents of PM<sub>2.5</sub>, and the capability and availability of current analytical methods.

The filter-based speciation sampler collects samples once every 3 days for analyses performed by an EPA contract laboratory. The speciation sampler is located at the Kapolei NCore monitoring station.

Table 5-1 lists the parameters measured, highest and second highest values recorded in the year, the annual arithmetic mean of all valid samples and the total number of samples collected in the year. Table 5-2 lists the analysis methods for each parameter.

With the exception of lead, there are no ambient air quality standards for the individual components of speciated PM<sub>2.5</sub>.

For more information on EPA's speciation program, go to:  
[www.epa.gov/ttn/amtic/speciepg.html](http://www.epa.gov/ttn/amtic/speciepg.html)

**Table 5-1. Annual Summary of PM<sub>2.5</sub> Speciation Data**

<b>Parameter</b>	<b>1<sup>st</sup> High (µg/m<sup>3</sup>)</b>	<b>2<sup>nd</sup> High (µg/m<sup>3</sup>)</b>	<b>Annual Mean (µg/m<sup>3</sup>)</b>	<b>No. of Samples</b>	<b>Percent Recovery</b>
<b>CARBON</b>					
Organic Carbon	0.773	0.745	0.2332	101	83
Elemental Carbon	0.332	0.244	0.0559	101	83
<b>METALS</b>					
Aluminum	0.102	0.080	0.0100	107	88
Antimony	0.046	0.040	0.0049	107	88
Arsenic	0.007	0.007	0.0006	107	88
Barium	0.088	0.077	0.0056	107	88
Bromine	0.007	0.007	0.0018	107	88
Cadmium	0.022	0.019	0.0008	107	88
Calcium	0.281	0.131	0.0493	107	88
Cerium	0.102	0.083	0.0099	107	88
Cesium	0.052	0.049	0.0035	107	88
Chlorine	1.756	1.724	0.5291	107	88
Chromium	0.057	0.019	0.0017	107	88
Cobalt	0.003	0.003	0.0000	107	88
Copper	0.009	0.008	0.0027	107	88
Indium	0.024	0.022	-0.0004	107	88
Iron	0.185	0.107	0.0288	107	88
Lead	0.021	0.019	0.0010	107	88
Magnesium	0.215	0.199	0.0393	107	88
Manganese	0.004	0.004	0.0002	107	88
Nickel	0.021	0.019	0.0045	107	88
Phosphorus	0.005	0.004	0.0003	107	88
Potassium	0.205	0.071	0.0342	107	88
Rubidium	0.009	0.009	0.0001	107	88
Selenium	0.007	0.006	0.0003	107	88
Silicon	0.159	0.141	0.0370	107	88
Silver	0.026	0.021	0.0016	107	88
Sodium	1.300	1.135	0.3884	107	88
Strontium	0.008	0.007	0.0010	107	88
Sulfur	2.848	2.344	0.3246	107	88
Tin	0.068	0.039	0.0043	107	88
Titanium	0.009	0.009	0.0025	107	88
Vanadium	0.024	0.019	0.0041	107	88
Zinc	0.011	0.006	0.0016	107	88
Zirconium	0.031	0.030	0.0013	107	88

Table 5-1 Continued

Parameter	1 <sup>st</sup> High ( $\mu\text{g}/\text{m}^3$ )	2 <sup>nd</sup> High ( $\mu\text{g}/\text{m}^3$ )	Annual Mean ( $\mu\text{g}/\text{m}^3$ )	No. of Samples	Percent Recovery
<b>IONS</b>					
Ammonium Ion	1.50	1.25	0.087	107	88
Potassium Ion	0.08	0.05	0.012	107	88
Sodium Ion	1.89	1.40	0.397	107	88
Total Nitrate	0.36	0.34	0.133	107	88
Sulfate	7.94	7.24	0.943	107	88

**Table 5-2. Speciation Collection and Analysis Methods**

Parameter	Collection Method	Analysis Method
Carbon	URG 300N Quartz Filter	Thermal Optical Transmittance
Metals	Met-One SASS Teflon Filter	Energy Dispersive X-Ray Fluorescence
Ions	Met-One SASS Nylon Filter	Ion Chromatography

## **Section 6**

# **AMBIENT AIR QUALITY TRENDS**

The following graphs illustrate 5-year trends for PM<sub>10</sub>, PM<sub>2.5</sub>, SO<sub>2</sub>, NO<sub>2</sub>, O<sub>3</sub>, and CO from 2013 to 2017 at all SLAMS stations monitoring for those pollutants.

Figures 6-1 and 6-2 are graphs of the PM<sub>10</sub> annual and maximum 24-hour averages.

Figure 6-3 is the graph of the PM<sub>2.5</sub> annual averages. Attainment of the PM<sub>2.5</sub> 24-hour standard is based on the 98<sup>th</sup> percentile value at each station, which is depicted in Figure 6-4.

Figures 6-5 and 6-6 are graphs of the SO<sub>2</sub> annual and maximum 24-hour averages.

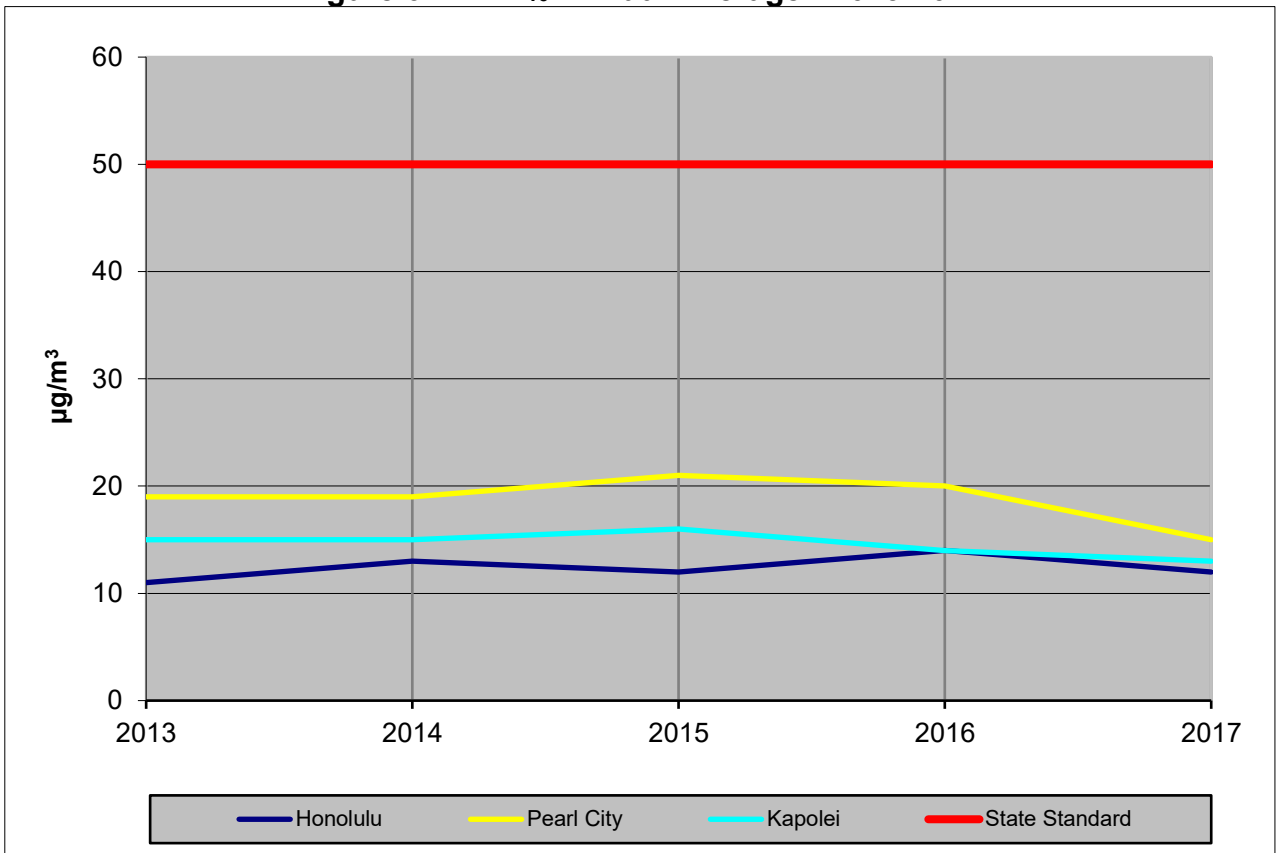
Figure 6-7 and 6-8 shows the annual and maximum 1-hour averages of NO<sub>2</sub> compared to the federal NAAQS.

Attainment of the 8-hour ozone standard is achieved by averaging 3 years of the fourth highest daily maximum 8-hour average concentrations, which must not exceed 0.070 ppm (standard effective October 1, 2016). Figure 6-9 is a graph of the fourth highest daily maximum values recorded at the Sand Island and Kapolei (since 2011) ozone monitoring stations in the past five years.

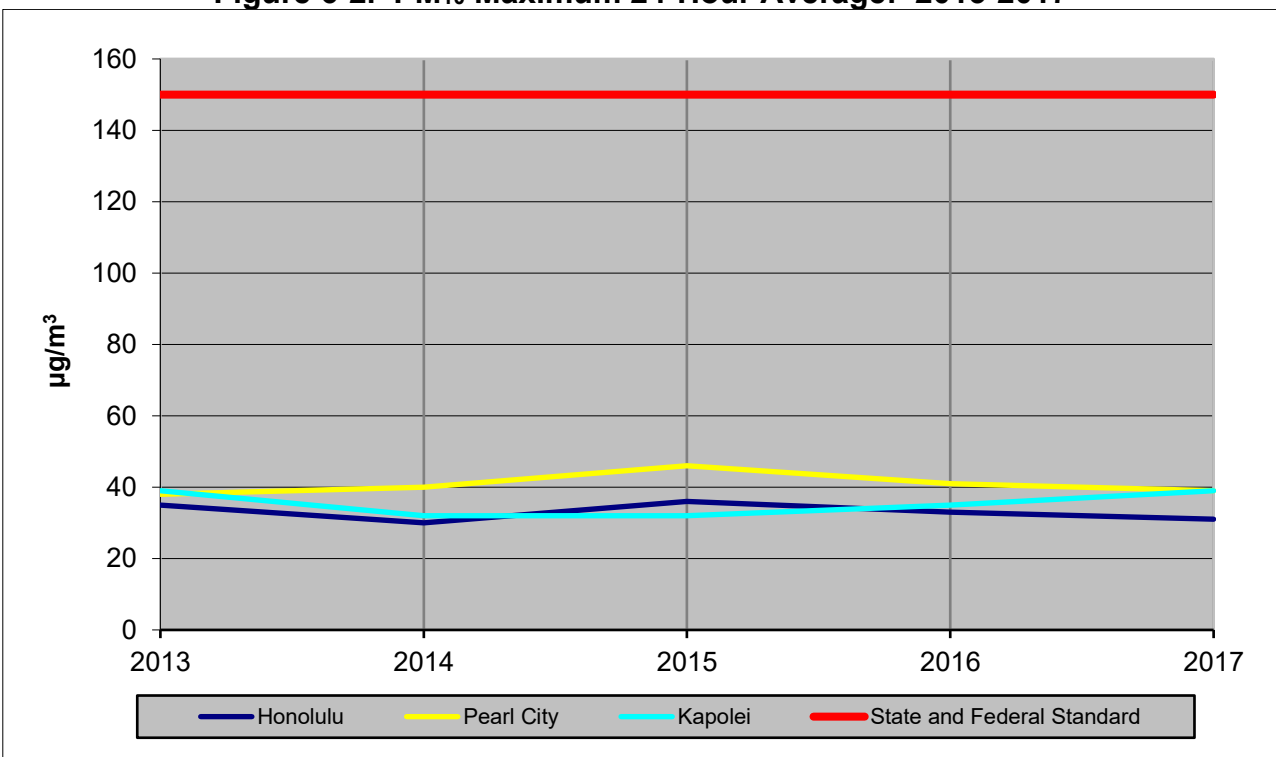
The graphs for 1-hour and 8-hour carbon monoxide (figures 6-10 and 6-11, respectively) represent the maximum 1-hour or 8-hour values recorded in the year.

Criteria pollutant levels remain below state and federal ambient air quality standards at all SLAMS stations in the state.

**Figure 6-1. PM<sub>10</sub> Annual Average: 2013-2017**

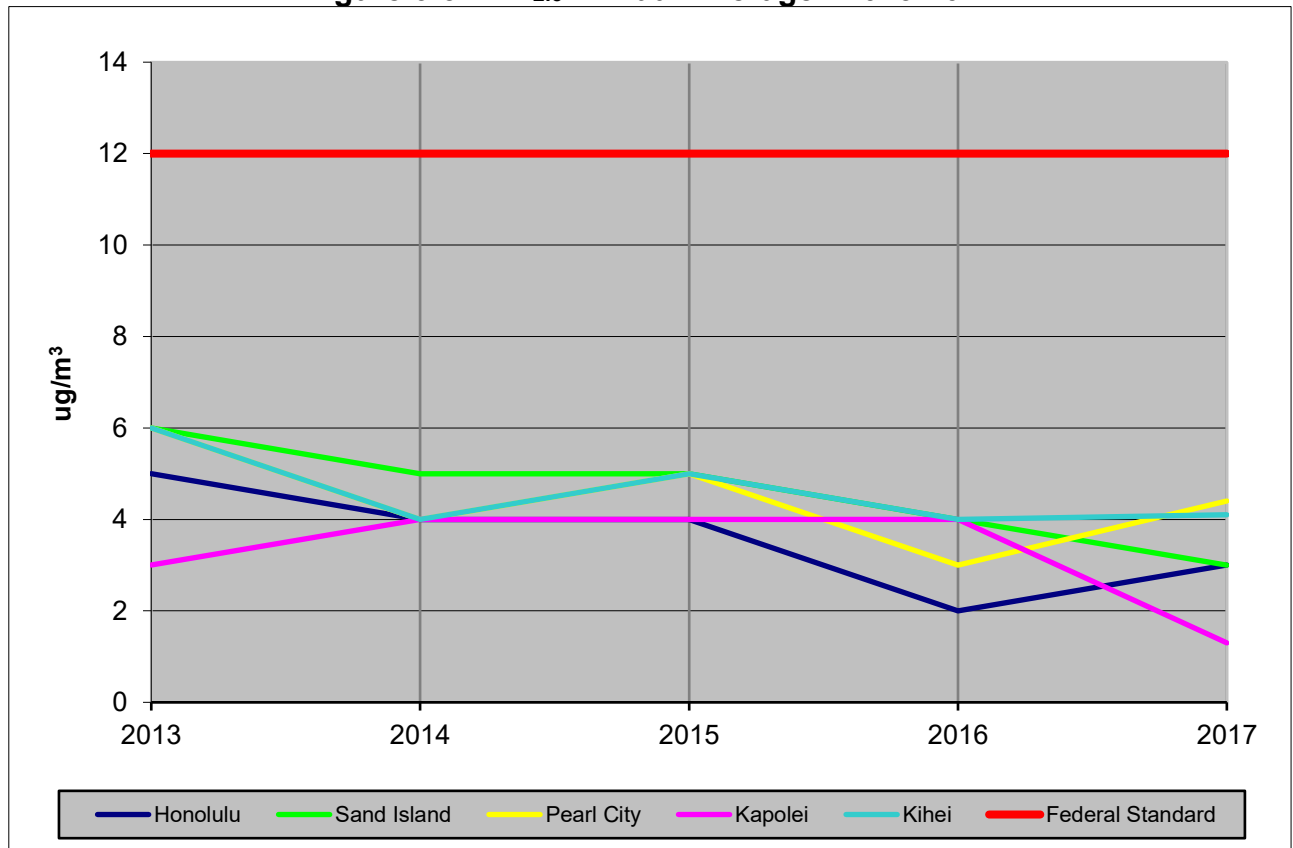


**Figure 6-2. PM<sub>10</sub> Maximum 24-Hour Average: 2013-2017**

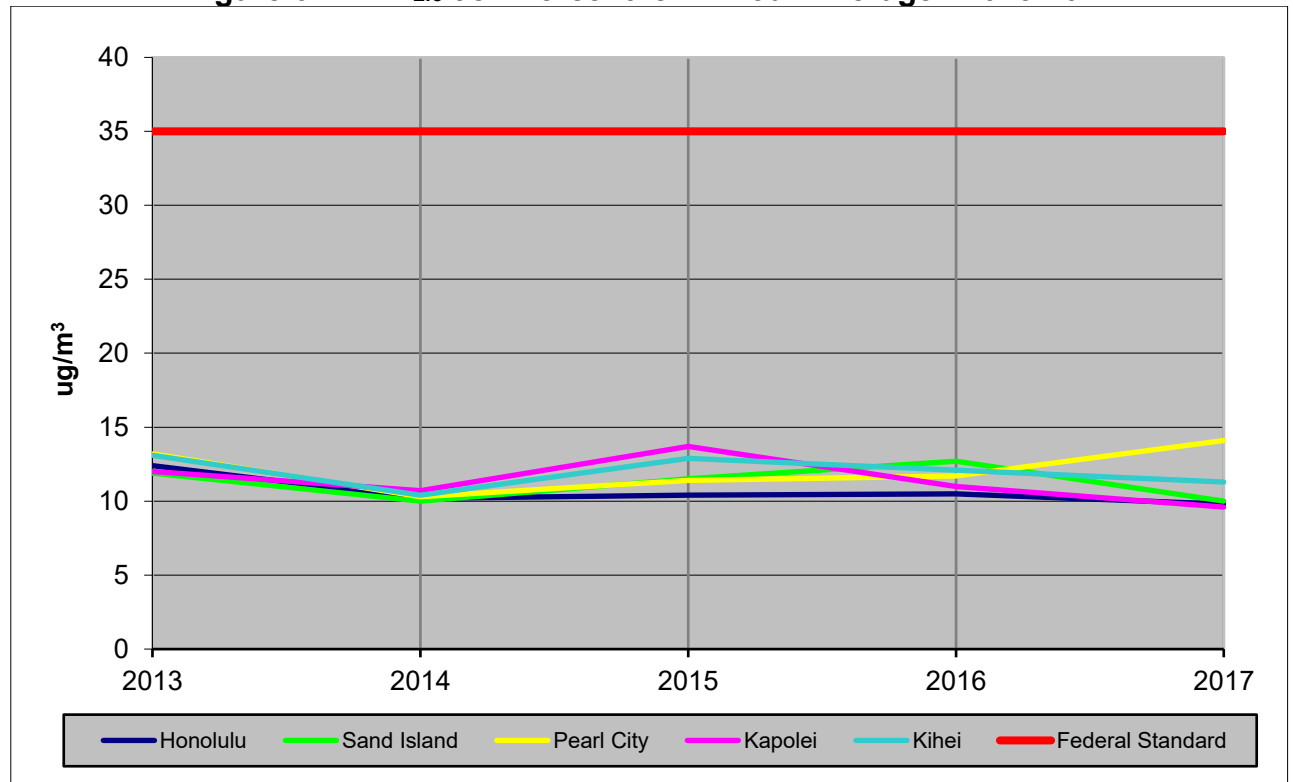




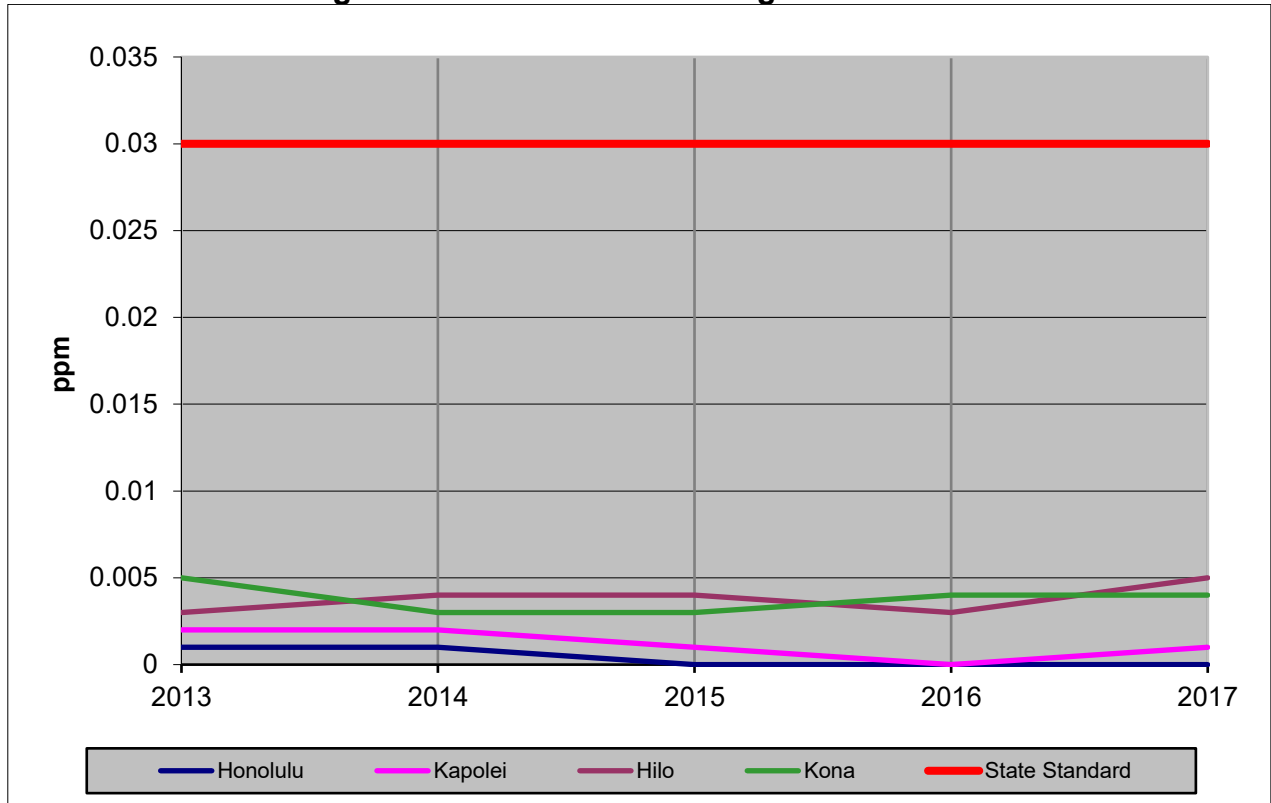
**Figure 6-3. PM<sub>2.5</sub> Annual Average: 2013-2017**



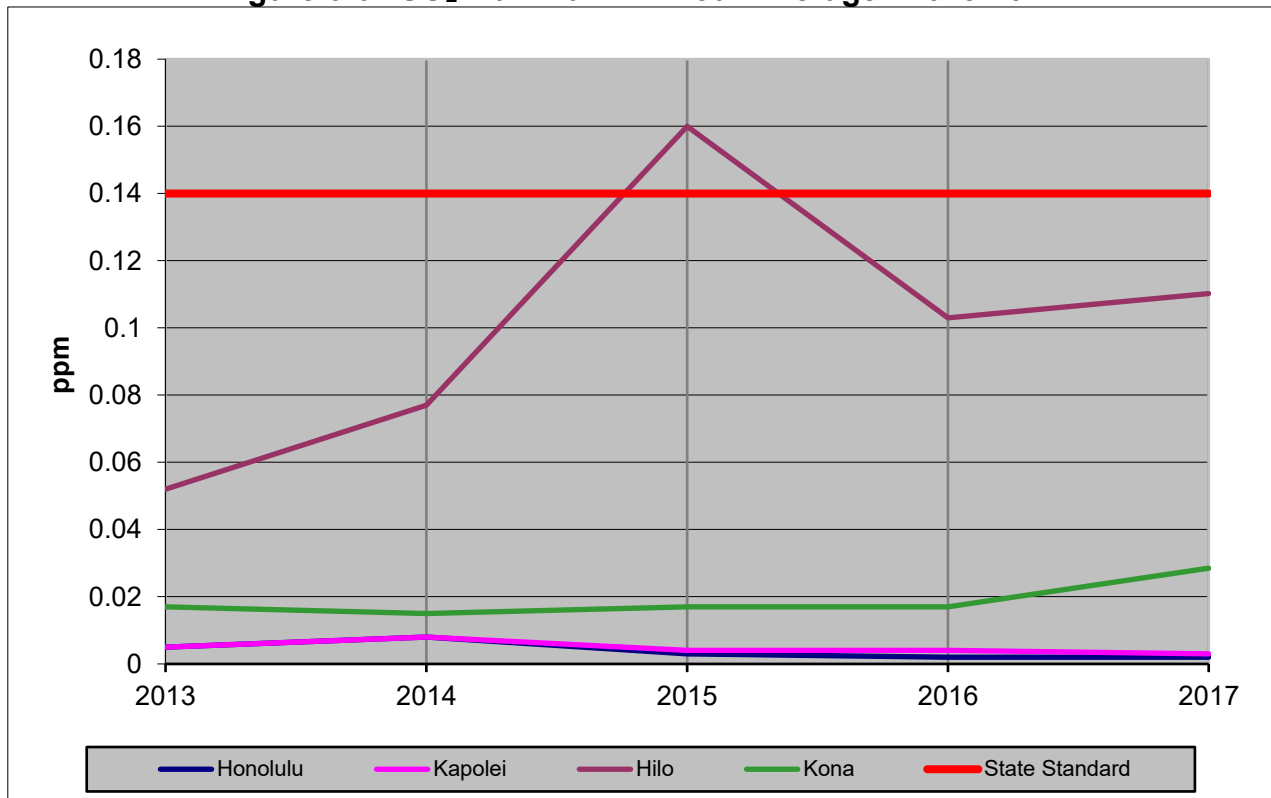
**Figure 6-4. PM<sub>2.5</sub> 98<sup>th</sup> Percentile 24-Hour Average: 2013-2017**



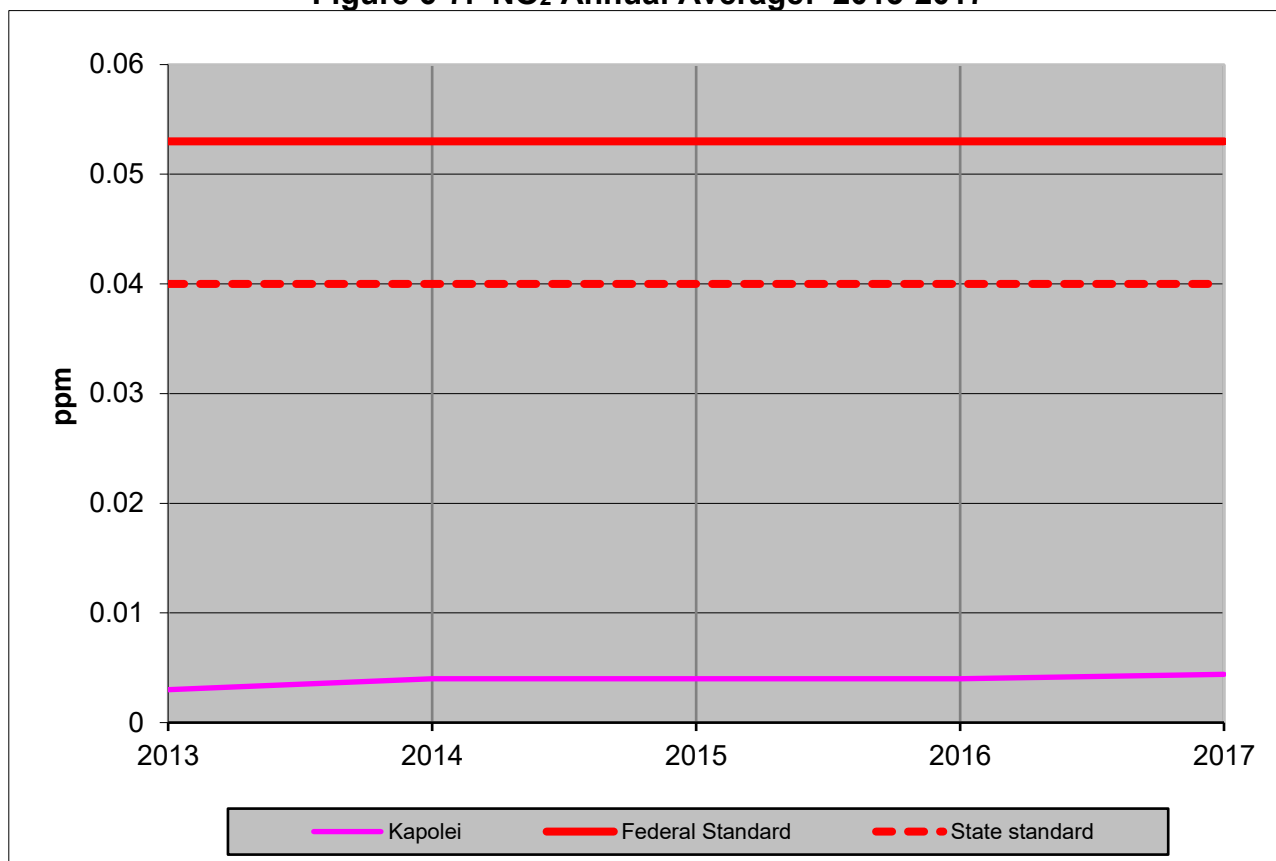
**Figure 6-5. SO<sub>2</sub> Annual Average: 2013-2017**



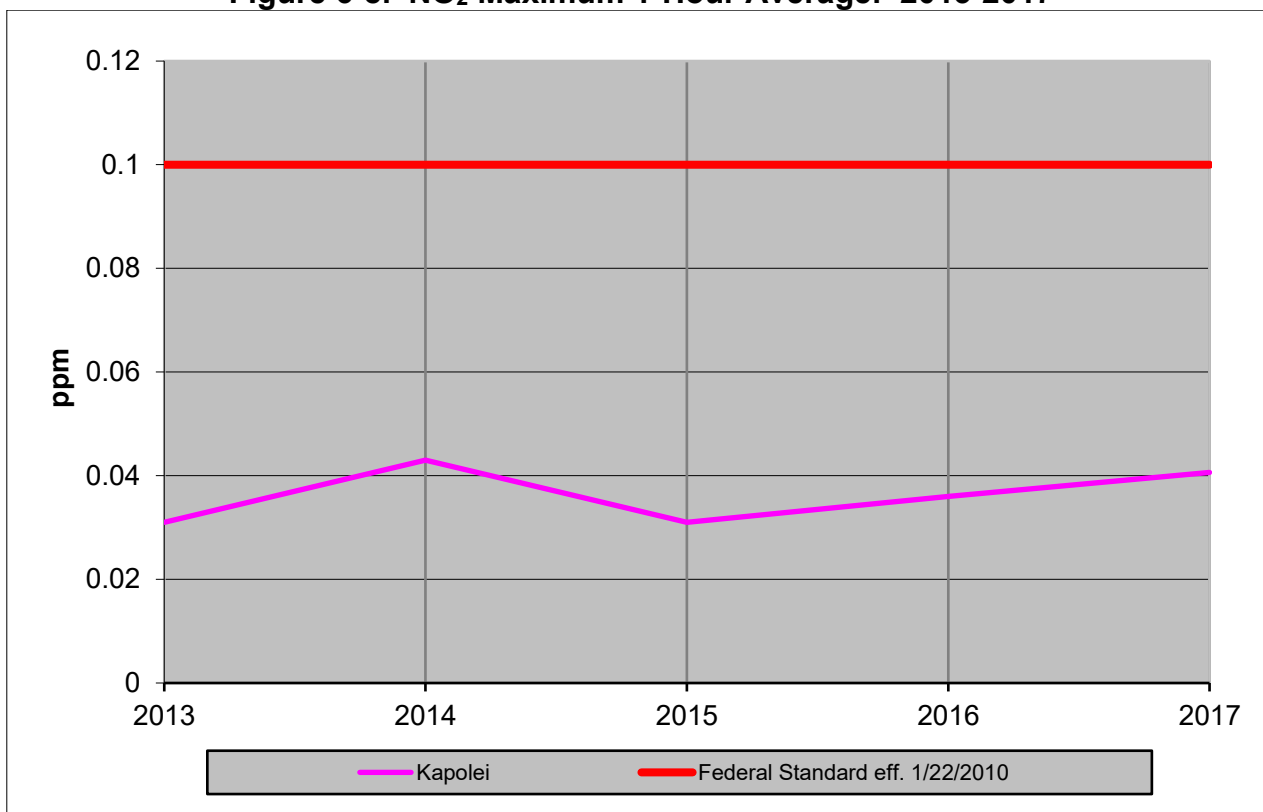
**Figure 6-6. SO<sub>2</sub> Maximum 24-Hour Average: 2013-2017**



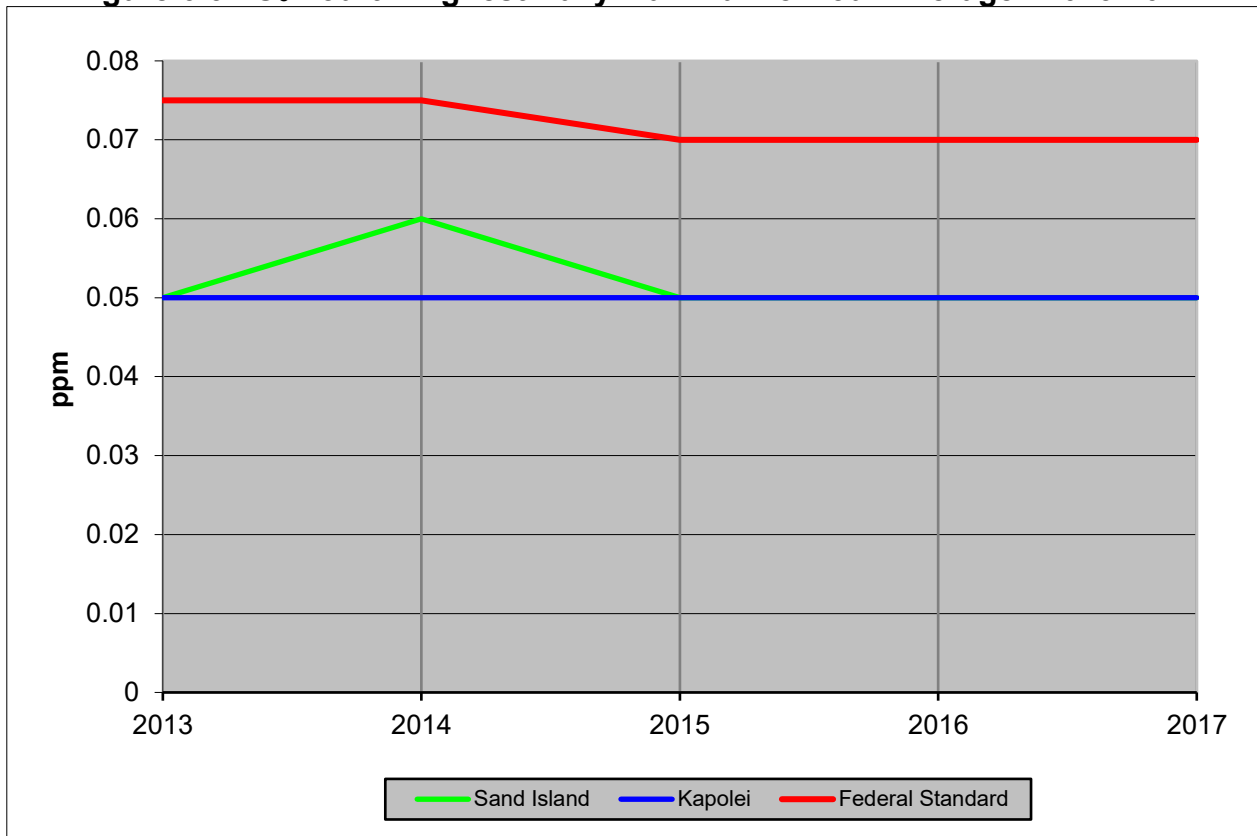
**Figure 6-7. NO<sub>2</sub> Annual Average: 2013-2017**



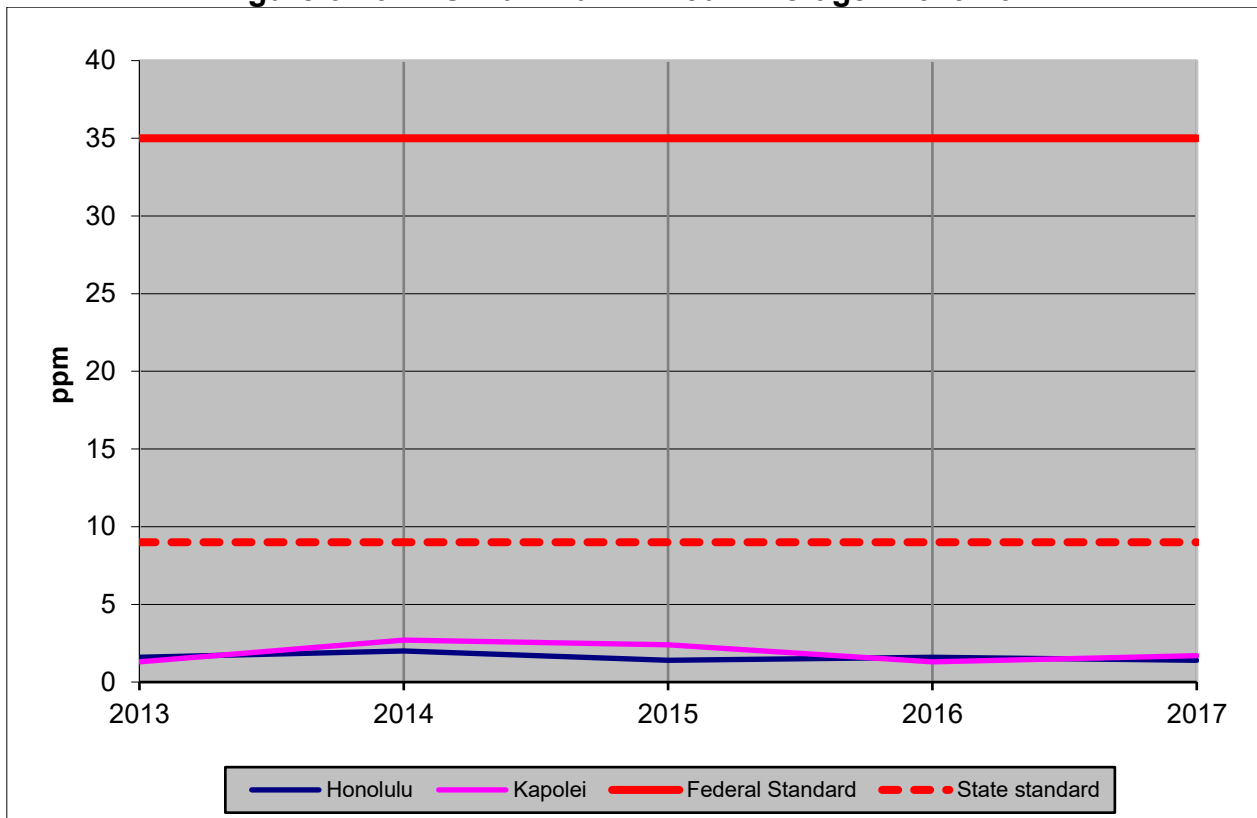
**Figure 6-8. NO<sub>2</sub> Maximum 1-Hour Average: 2013-2017**



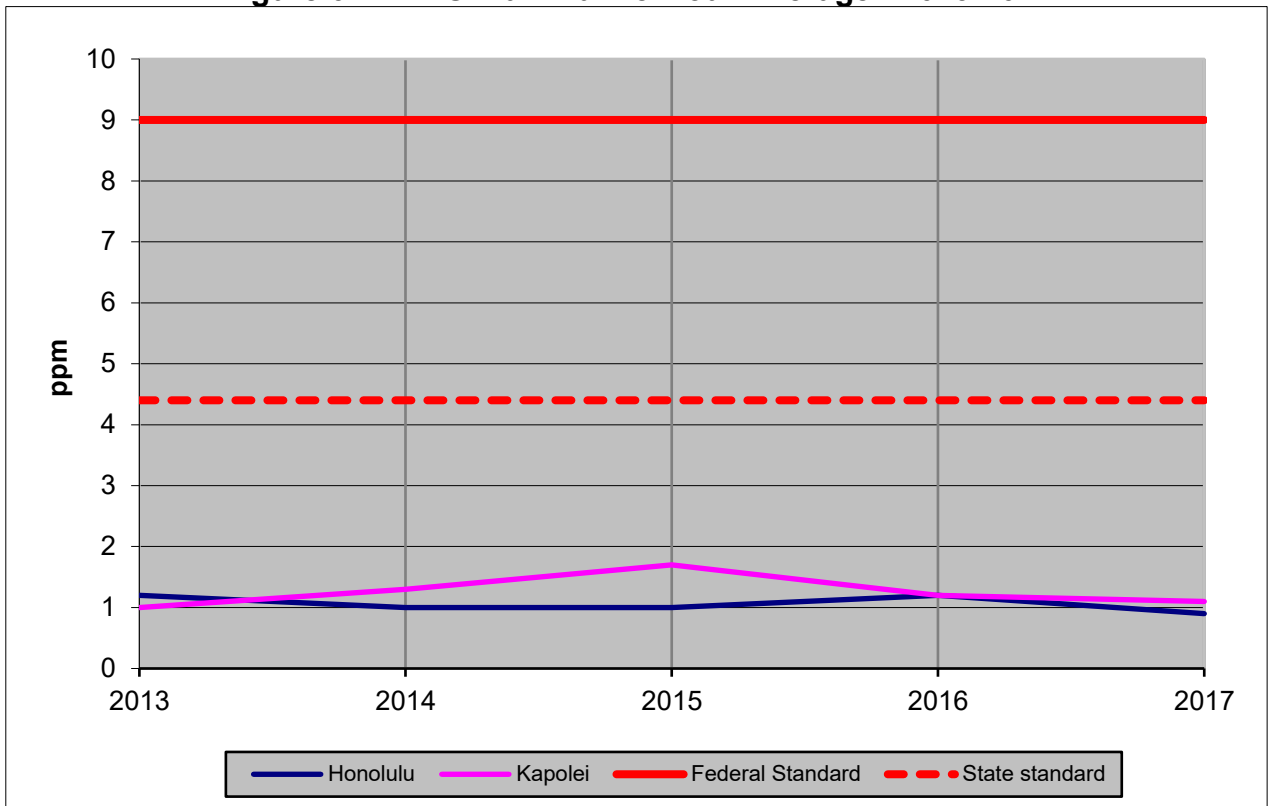
**Figure 6-9. O<sub>3</sub> Fourth Highest Daily Maximum 8-Hour Average: 2013-2017**



**Figure 6-10. CO Maximum 1-Hour Average: 2013-2017**



**Figure 6-11. CO Maximum 8-Hour Average: 2013-2017**



## Exhibit 5: Coastal Zone Management

Please see Exhibit 3 - Tsunami Evacuation Zone Map and EA text discussing Coastal Zone Management.


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## Exhibit 6: Contamination and Toxic Substances



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Source: State of Hawaii Department of Health, Hazard Evaluation and Emergency Response Office, iHEER Database Viewer	
	PROJECT NAME: Environmental Assessment 4 Lumahai Street Honolulu, Hawaii 96825 Tax Map Key 3-9-013:32
	EXHIBIT TITLE: Contamination and Toxic Substances
EXHIBIT NUMBER: 6	

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## Exhibit 7: Endangered Species

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U.S. Fish & Wildlife Service

# Pacific Islands Fish and Wildlife Office

Working with you to conserve the natural resources of  
Hawai'i and the Pacific Islands

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## Animal Avoidance and Minimization Measures



The following measures are recommended to avoid or minimize project impacts to threatened and endangered animals - including bats, birds, turtles, and invertebrates - in Hawai'i and the Pacific

Islands.

## Scroll down or click for avoidance and minimization measures when encountering:

[Endangered Hawaiian hoary bat \(#HawaiianMammals\)](#)

[Hawaiian Seabirds \(#Seabirds\)](#)

[Wedge-tailed shearwater - 'ua'u kani \(Ardenna pacificus\) \(#wedgetail\)](#)

[White terns or Manu O Kū \(Gygis alba\) \(#whitetern\)](#)

[Hawaiian goose or Nēnē \(Branta sandvicensis \(# nēnē\)\)](#)

[Hawaiian waterbirds \(#waterbirds\)](#)

[Hawaiian forest birds \(#forestbirds\)](#)

[Hawaiian hawk \(Buteo solitarius\) \(#hawk\)](#)

[Blackburn's sphinx moth \(Manduca blackburni\) \(#sphinxmoth\)](#)

[Endangered and Threatened Sea Turtles \(#seaturtles\)](#)

[Kaua'i cave wolf spider \(Adelocosa anops\) and Kaua'i cave amphipod \(Spelaeorchestia koloana\) \(#kauaicave\)](#)

[Picture-wing flies \(#flies\)](#)

[Endangered land snails \(#snails\)](#)

[Endangered Aquatic invertebrates \(#aquatic\)](#)

[Hawaiian Damselflies \(#damselflies\)](#)

[Anchialine pool shrimp \(#Anchialine\)](#)

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## Endangered Hawaiian hoary bat - ‘Ōpe‘ape‘a (*Lasiurus cinereus semotus*)\_()

### **Habitat:**

The ‘ōpe‘ape‘a roosts in both exotic and native woody vegetation across all islands and will leave young unattended in trees and shrubs when they forage. If trees or shrubs 15 feet or taller are cleared during the pupping season, there is a risk that young bats could inadvertently be harmed or killed since they are too young to fly or may not move away. Additionally, Hawaiian hoary bats forage for insects from as low as 3 feet to higher than 500 feet above the ground and can become entangled in barbed wire used for fencing.

### **Avoidance and Minimization:**

To avoid and minimize impacts to the endangered ‘ōpe‘ape‘a we recommend you incorporate the following applicable measures into your project plan:

-Do not disturb, remove, or trim woody plants greater than 15 feet tall during the bat birthing and pup rearing season (June 1 through September 15).

-Do not use barbed wire for fencing.

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## Hawaiian Seabirds ()

Endangered Hawaiian petrel - ‘Ua‘u (*Pterodroma sandwichensis*)

Threatened Newell’s shearwater - A’o (*Puffinus auricularis newelli*)

Endangered Band-rumped storm-petrel - Akē‘akē (*Oceanodroma castro*)

Migratory White terns or Manu O Kū (*Gygis alba*)

Migratory Wedge-tailed shearwater - ‘Ua‘u kani (*Ardenna pacificus*)

### **Habitat:**

**Newell’s shearwaters** are found in the highest densities on Kaua‘i with lower densities on all of the other islands, except Lāna‘i. **Hawaiian Petrel** populations are greatest on Maui, Lāna‘i, and Kaua‘i with lower densities on Hawai‘i and Molokai. **Band-rumped storm-petrels** are found in low densities throughout the islands. All islands may experience overflight at night.

For all projects, Hawaiian seabirds may traverse the project area at night during the breeding, nesting and fledging seasons (March 1 to December 15). Outdoor lighting could result in seabird disorientation, fallout, and injury or mortality. Seabirds are attracted to lights and after circling the lights they may become exhausted and collide with nearby wires, buildings, or other structures or they may land on the

ground. Downed seabirds are subject to increased mortality due to collision with automobiles, starvation, and predation by dogs, cats, and other predators. Young birds (fledglings) traversing the project area between September 15 and December 15, in their first flights from their mountain nests to the sea, are particularly vulnerable.

## **Avoidance and Minimization:**

To avoid and minimize potential project impacts to seabirds we recommend you incorporate the following applicable measures into your project plan:

*-Fully shield all outdoor lights so the bulb can only be seen from below bulb height and only use when necessary.*

*-Install automatic motion sensor switches and timer controls on all outdoor lights or turn off lights when human activity is not occurring in the lighted area.*

*-Avoid nighttime construction during the seabird fledging period, September 15 through December 15.*

**If your project includes a tower or antennae, then the following recommendations should be included in the plan.**

Listed seabirds have been documented colliding with communication towers, particularly in areas of high seabird passage rate. In general, self-supporting monopoles are the least likely to result in collisions, whereas lattice towers, particularly those that rely on guy-wires, have a much higher collision risk.

**To avoid and minimize the likelihood that tower collisions will result in take of listed seabirds we recommend you incorporate the following applicable measures into your project plan:**

*-The profile of the tower should be as small as possible, minimizing the extent of the tower that protrudes above the surrounding vegetation layer, and avoid the use of guywires.*

*-If the top of the tower must be lit to comply with Federal Aviation Administration regulations, use a flashing red light versus a steady-beam red or white light.*

*-If possible, co-locate with existing towers or facilities.*

**If your project occurs near a known seabird colony, please include the following measures:**

Seabirds have been known to collide with fences, powerlines and other structures near colonies. To avoid and minimize the likelihood of collision we recommend you incorporate the following applicable measures into your project plan:

*-Where fences extend above vegetation, integrate three strands of polytape into the fence to increase visibility.*

*-For powerlines, guywires and other cables, minimize exposure above vegetation height and vertical profile.*

**If your project occurs in an area of high-passage rate of seabirds, we recommend further coordination with our office to address specific project details and potential seabird interactions.**

## **Wedge-tailed shearwater -‘Ua‘u kani (*Ardenna pacificus*)**

### **Habitat:**

Unlike other Hawaiian seabird species, wedge-tailed shearwaters nest in littoral vegetation along coastlines. Nesting adults, eggs, and chicks are particularly susceptible to impacts from human disturbance and predators.

## **Avoidance and Minimization:**



To avoid and minimize potential project impacts to wedge-tailed shearwaters we recommend you incorporate the following applicable measures into your project plan:

- *Conduct surveys throughout the project area during the species' breeding season (March through November) to determine the presence and location of nesting areas.*
- *If wedge-tailed shearwaters nest within a proposed project area and construction would cause ground disturbance, time project construction to occur outside of the breeding season (March through November).*
- *If outdoor lighting is used, use light shields that are completely opaque, appropriately sized, and positioned so that the bulb is only visible from below and the light from the shielded source cannot be seen from the beach.*
- *Install automatic motion sensor switches and timer controls on all outdoor lights or turn off lights when human activity is not occurring in the lighted area.*

## White terns or Manu O Kū (*Gygis alba*)\_()

### **Habitat:**

White terns often nest in urban parks and residential areas from Hawai'i Kai to Hickam Air Force Base on the island of O'ahu. This species is listed by the State of Hawai'i as endangered on O'ahu. White terns breed during all months of the year, but the core breeding season is January through June, with a major peak in March. White terns do not build nests, instead they lay a single egg directly on a ledge, tree branch, or other suitable location. The egg will hatch after approximately 35 days, after which it takes 45 days for the chick to be mature enough to leave the tree on its own. Signs that white terns are present include accumulation of white feathers or white droppings underneath the tree.

### **Avoidance and Minimization:**

To avoid and minimize potential project impacts to white terns we recommend you incorporate the following applicable measures into your project plan:

- *If tree trimming is part of your project, please examine all trees slated to be cut to determine if there are white terns nesting in them, especially during the white tern breeding season (January thru June).*
- *Do not trim branches or remove trees with nesting white terns.*
- *Do not disturb a nesting tree or branch for at least 80 days from when the egg is laid.*

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## Hawaiian goose, Nēnē (*Branta sandvicensis*)\_()

### **Habitat:**

Nēnē are predominately found on the islands of Hawai'i, Maui, Molokai, and Kaua'i, with a small population on O'ahu. They may be observed in a variety of habitats, but prefer open areas, such as pastures, golf courses, wetlands, natural grasslands and shrublands, and lava flows. Threats to the species include introduced mammalian and avian predators, wind facilities, and vehicle strikes.

### **Avoidance and Minimization:**

To avoid and minimize potential project impacts to nēnē we recommend you incorporate the following applicable measures into your project plan:

- *Do not approach, feed, or disturb nēnē.*

- *If nēnē are observed loafing or foraging within the project area during the breeding season (September through April), halt work and have a biologist familiar with the nesting behavior of nēnē survey for nests in and around the project area prior to the resumption of any work. Repeat surveys after any subsequent delay of work of 3 or more days (during which the birds may attempt to nest).*

- *Cease all work immediately and contact the Service for further guidance if a nest is discovered within a radius of 150 feet of proposed work, or a previously undiscovered nest is found within said radius after work begins.*

- *In areas where nēnē are known to be present, post and implement reduced speed limits, and inform project personnel and contractors about the presence of endangered species on-site.*

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## Hawaiian waterbirds ()

Hawaiian stilt, Ae'o (*Himantopus mexicanus knudseni*)

Hawaiian coot, 'Alea kea (*Fulica alai*)

Hawaiian common gallinule, 'Alea 'ula (*Gallinula galeata sandvicensis*)

Hawaiian duck, Koloa (*Anas wyvilliana*)

### **Habitat:**

Listed Hawaiian waterbirds are found in fresh and brackish-water marshes and natural or man-made ponds. **Hawaiian stilts** may also be found wherever ephemeral or persistent standing water may occur. Threats to these species include non-native predators, habitat loss, and habitat degradation. **Hawaiian ducks** are also subject to threats from hybridization with introduced mallards. While the **Hawaiian stilt**, **Hawaiian coot**, and **Hawaiian duck** may be found on all islands, the **Hawaiian common gallinule** is restricted to Kaua'i and O'ahu.

If your project will create, either purposefully or inadvertently, any kind of temporary or permanent standing water, including excavation or grading for construction or roadwork, then it may attract Hawaiian waterbirds to the site. In particular, the **Hawaiian stilt** is known to nest in sub-optimal locations (e.g. any ponding water), if water is present. Hawaiian waterbirds attracted to sub-optimal habitat may suffer adverse impacts, such as predation and reduced reproductive success, and thus the project may create an attractive nuisance.

### **Avoidance and Minimization:**

To avoid and minimize potential project impacts to Hawaiian waterbirds we recommend you incorporate the following applicable measures into your project plan:

- *In areas where waterbirds are known to be present, post and implement reduced speed limits, and inform project personnel and contractors about the presence of endangered species on-site or nearby.*

- *If water resources are located within or adjacent to the project site, incorporate the applicable best management practices (BMPs) regarding work in aquatic environments into the project design.*

- *Have a biological monitor that is familiar with the species' biology conduct Hawaiian waterbird nest surveys where appropriate habitat occurs within the vicinity of the proposed project site prior to project initiation. Repeat surveys again within 3 days of project initiation and after any subsequent delay of work of 3 or more days (during which the birds may attempt to nest).*

**If a nest or active brood is found:**

- *Contact the Service within 24 hours for further guidance.*
- *Establish and maintain a 100-foot buffer around all active nests and/or broods until the chicks/ducklings have fledged. Do not conduct potentially disruptive activities or habitat alteration within this buffer.*
- *Have a biological monitor that is familiar with the species' biology present on the project site during all construction or earth moving activities until the chicks/ducklings fledge to ensure that Hawaiian waterbirds and nests are not adversely impacted.*

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## Endangered Hawaiian forest birds ()

OAHU: O'ahu elepaio, *Chasiempis ibidis*; 'I'iwi, *Drepanis coccinea*;

KAUAI: Puaiohi, *Myadestes palmeri*; 'Akikiki, *Oreomystis bairdi*; 'Akeke'e, *Loxops caeruleirostris*; 'I'iwi, *Drepanis coccinea*

Hawai'i : 'Akiapōlā'au, *Hemignathus wilsonsi*; Hawai'i creeper, *Loxops mana*; Hawai'i 'akepa, *Loxops coccineus*; Palila, *Loxioides bailleui*; 'I'iwi, *Drepanis coccinea*

MAUI: Maui parrotbill, *Pseudonestor xanthophrys*; 'Akohekohe, *Palmeria dolei*; 'I'iwi, *Drepanis coccinea*

MOLOKAI: 'I'iwi, *Drepanis coccinea*

### **Habitat:**

Hawaiian forest birds' current ranges are predominately restricted to montane forests (above 3,500 feet in elevation) due to habitat loss and threats at lower elevations. Hawaiian forest bird habitat has been lost due to development, agriculture, grazing, wildfire, and spread of invasive habitat-altering species. Forest birds are also affected by mosquito-borne diseases. Mosquitoes are not native to Hawai'i . Their chance of occurrence increases in areas where ungulate presence results in small pools of standing water. Actions such as road construction and development increase human access and result in increased wildfire and invasive species threats. Grazing results in reductions in woody vegetation and increased grass cover, which reduces forest habitat quality and results in increased wildfire risk on the landscape.

### **Avoidance and Minimization:**

Avoid conducting activities within forest bird habitat that:

- *Promote the spread or survival of invasive species.*
- *Increase mosquito populations or stagnant water habitat.*
- *Increase wildfire threat to montane forest habitats.*
- *Remove tree cover during the peak breeding season between January 1 and June 30.*

Avoid using playback calls or recordings during bird surveys.

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# Hawaiian hawk - 'Io (*Buteo solitarius*)\_()

## **Habitat:**

The 'io is known to occur across a broad range of forest habitats throughout the Island of Hawai'i . Loud, irregular and unpredictable activities, such as using heavy equipment or building a structure, near an endangered 'io nest may cause nest abandonment and failure. Harassment of 'io nesting sites can alter feeding and breeding patterns or result in nest or chick abandonment. Nest disturbance can also increase exposure of chicks and juveniles to inclement weather or predators.

## **Avoidance and Minimization:**

To avoid and minimize impacts to 'io we recommend you incorporate the following applicable measures into your project plan:

- *If work must be conducted during the March 1 through September 30 'io breeding season, have a biologist familiar with the species conduct a nest search of the project footprint and surrounding areas immediately prior to the start of construction activities.*

- *Pre-disturbance surveys for 'io are only valid for 14 days. If disturbance for the specific location does not occur within 14 days of the survey, conduct another survey.*

- *No clearing of vegetation or construction activities should occur within 1,600 feet of any active 'io nest during the breeding season until the young have fledged.*

- *Regardless of the time of year, no trimming or cutting trees containing a 'io nest is allowed, as nests may be re-used during consecutive breeding seasons.*

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# Blackburn's sphinx moth (*Manduca blackburni*)\_()

## **Habitat:**

The Blackburn's sphinx moth is known from the islands of Hawai'i , Maui, Lāna'i, and Kahoolawe, and may be in the vicinity of any proposed project on these islands if host plants are present. Adult moths feed on nectar from native plants, including beach morning glory (*Ipomoea pes-caprae*), 'ilie'e (*Plumbago zeylanica*), and maiapilo (*Capparis sandwichiana*); while larvae feed upon non-native tree tobacco (*Nicotiana glauca*) and native aiea (*Nothocestrum* sp.). Moth eggs and larvae are most commonly found feeding on the leaves of native aiea and non-native tree tobacco. To pupate, the larvae burrow into the soil and can remain in a state of torpor for a year or more before emerging from the soil. Soil disturbance can result in death of the pupae.

## **Avoidance and Minimization:**

We offer the following survey recommendations to assess whether the Blackburn's sphinx moth is within the project area:

- *A biologist familiar with the species should survey areas of proposed activities for Blackburn's sphinx moth and its larval host plants prior to work initiation.*

- *Surveys should be conducted during the wettest portion of the year (usually November-April or several weeks after a significant rain) and within 4-6 weeks prior to construction.*

- *Surveys should include searches for eggs, larvae, and signs of larval feeding (chewed stems, frass, or leaf damage).*

- If moths or the native aiea or tree tobacco over 3 feet tall are found during the survey, please contact the Service for additional guidance to avoid take.

If no Blackburn's sphinx moth, aiea, or tree tobacco are found during pre-construction surveys, it is imperative that measures be taken to avoid attraction of Blackburn's sphinx moth to the project location and prohibit tree tobacco from entering the site. Tree tobacco can grow greater than 3 feet tall in approximately 6 weeks. If it grows over 3 feet, the plants may become a host plant for Blackburn's sphinx moth.

**We therefore recommend that you:**

- Remove any tree tobacco less than 3 feet tall.

- Monitor the site every 4-6 weeks for new tree tobacco growth before, during and after the proposed ground-disturbing activity.

- Monitoring for tree tobacco can be completed by any staff, such as groundskeeper or regular maintenance crew, provided with picture placards of tree tobacco at different life stages.

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## Sea Turtles ()

Endangered Hawksbill sea turtle (*Eretmochelys imbricata*)

Green sea turtles (*Chelonia mydas*): threatened in Hawaii and Johnston Atoll, endangered in Mariana Archipelago, American Samoa, and Palmyra, Kingman, Howland, Baker, Wake and Jarvis National Wildlife Refuges

### **Habitat:**

The Service consults on sea turtles and their use of terrestrial habitats (beaches where nesting and/or basking is known to occur), whereas the National Marine Fisheries Service (NMFS) consults on sea turtles and their use of off-shore and open ocean habitats. We recommend that you consult with NMFS regarding the potential impacts from the proposed project to sea turtles in off-shore and open ocean habitats.

Green sea turtles may nest on any sandy beach area in the Pacific Islands. Hawksbill sea turtles exhibit a wide tolerance for nesting substrate (ranging from sandy beach to crushed coral) with nests typically placed under vegetation. Both species exhibit strong nesting site fidelity. Nesting for the Central North Pacific DPS occurs on beaches from May through September, peaking in June and July, with hatchlings emerging through November and December. In the Marianas, nesting may occur anytime throughout the year, with a peak between April and September. In American Samoa, the nesting and hatching season runs from October to March.

Construction on, or in the vicinity of, beaches can result in sand and sediment compaction, sea turtle nest destruction, beach erosion, contaminant and nutrient runoff, and an increase in direct and ambient light pollution which may disorient hatchlings or deter nesting females. Off-road vehicle traffic may result in direct impacts to sea turtles and nests, and also contributes to habitat degradation through erosion and compaction.

Projects that alter the natural beach profile, such as nourishment and hardening, including the placement of seawalls, jetties, sandbags, and other structures, are known to reduce the suitability of on-shore habitat for sea turtles. These types of projects often result in sand compaction, erosion, and additional sedimentation in nearshore habitats, resulting in adverse effects to the ecological community and future sea turtle nests. The hardening of a shoreline increases the potential for erosion in adjacent areas, resulting in subsequent requests to install stabilization structures or conduct beach nourishment in adjacent areas. Given projected sea level rise estimates, the likelihood of increase in storm surge intensity, and other factors associated with climate change, we anticipate that beach erosion will continue and likely increase.

Where possible, projects should consider alternatives that avoid the modification or hardening of coastlines. Beach nourishment or beach hardening projects should evaluate the long-term effect to sea turtle nesting habitat and consider the cumulative effects.

## Avoidance and Minimization:

To avoid and minimize project impacts to sea turtles and their nests we recommend you incorporate the following applicable measures into your project plan:

- *No vehicle use on or modification of the beach/dune environment during the sea turtle nesting or hatching season (May to December for Hawai'i ; throughout the year in the Marianas; October to March for American Samoa).*
- *Do not remove native dune vegetation.*
- *Incorporate applicable BMPs regarding Work in Aquatic Environments (see separate document) into the project design.*
- *Have a biologist familiar with sea turtles conduct a visual survey of the project site to ensure no basking sea turtles are present.*

**If a basking sea turtle is found within the project area, cease all mechanical or construction activities within 100 feet until the animal voluntarily leaves the area.**

- *Cease all activities between the basking turtle and the ocean.*
- *Remove any project-related debris, trash, or equipment from the beach or dune if not actively being used.*
- *Do not stockpile project-related materials in the intertidal zone, reef flats, or stream channels.*

Optimal sea turtle nesting habitat is a dark beach, free of barriers that restrict sea turtle movement. Nesting turtles may be deterred from approaching or laying successful nests on lighted or disturbed beaches. They may become disoriented by artificial lighting, leading to exhaustion and placement of a nest in an inappropriate location (such as at or below the high tide line). Hatchlings that emerge from nests may also be disoriented by artificial lighting. Inland areas visible from the beach should be sufficiently dark to allow for successful navigation to the ocean.

**To avoid and minimize project impacts to sea turtles from lighting we recommend incorporating the following applicable measures into your project plan:**

- *Avoid nighttime work during the nesting and hatching season (May to December for Hawai'i ; throughout the year in the Marianas; October to March for American Samoa).*
- *Minimize the use of lighting and shield all project-related lights so the light is not visible from any beach.*
- *If lights can't be fully shielded or if headlights must be used, fully enclose the light source with light filtering tape or filters.*
- *Incorporate design measures into the construction or operation of buildings adjacent to the beach to reduce ambient outdoor lighting such as tinting or using automatic window shades for exterior windows that face the beach; reducing the height of exterior lighting to below 3 feet and pointed downward or away from the beach; and minimize light intensity to the lowest level feasible and, when possible, include timers and motion sensors.*

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# Kaua'i cave wolf spider (*Adelocosa anops*) and Kaua'i cave amphipod (*Spelaeorchestia koloana*)( )

## **Habitat:**

These species are restricted to subterranean mesocavern (cracks, voids, spaces, caves) bearing rock with above ground soil deposits of less than 12 inches within the Kōloa District of the island of Kaua'i. Mesocaverns that provide appropriate food sources (woody debris, plant roots penetrating the mesocavern) and conditions approaching 100 percent relative humidity levels are likely to contain these unique animals. All known areas likely to contain these animals have been designated critical habitat for these species.

One of the primary threats to these two species is their mesocavern (underground spaces, caves, cracks, crevices) habitat being exposed to drying conditions, most typically from increased airflow created by breaking through the mesocaverns.

## **Avoidance and Minimization:**

If your project occurs in the vicinity of the habitat for these species, we recommend including the following measures in your project plan:

### **Survey Recommendations:**

- Survey project area for depth of soil deposits and the presence of caves. Any areas with soil deposits greater than 12 inches are not likely to provide appropriate habitat or have the species present.
- Contact the Service and do not disturb the vegetation or soil in areas with soil deposits less than 12 inches or if a cave is found.

### **Enhance cave invertebrate habitat if possible:**

- Outplant native plants like maiapilo (*Capparis sandwichiana*) so roots eventually provide a food source and irrigate the surface.
- Control established ecosystem-altering non-native invasive plant species around all caves.
- Enhance habitat by sealing currently non-occupied caves with temporary air blocks – to increase relative humidity by restricting air flow through cave entrances.
- Design permanent air blocks (e.g., walls) and develop plans to replace temporary air blocks.

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# Picture-wing flies ( )

## **Habitat:**

Picture-wing flies live in montane forest habitat and are restricted to single islands. See the table below for locations of protected picture-wing flies. Larvae of each species are dependent on a single or a few related plant species. Picture-wing flies are threatened by destruction of habitat from non-native ungulates and invasive weeds, and also directly threatened by a variety of introduced invertebrates, including yellow jackets and several ant species.

## **Avoidance and Minimization:**

To avoid and minimize project impacts to picture-wing flies we recommend incorporating the following applicable measures into your project plan:

- Avoid clearing forest vegetation within 200 feet of a site potentially occupied by endangered *Drosophila*.
- Restrict construction equipment to existing roads and trails.
- If the site is potentially occupied by endangered *Drosophila* based on location and presence of host plants, consult the Service since permits are required to conduct surveys.
- Pesticide use may require a larger buffer distance and the Service should be consulted.

**General *Drosophila* species Information (check critical habitat layers for specific locations):**

Species	Island	Habitat	Host plant(s)
<i>D. aglaia:</i>	O’ahu	Mesic forest	Urera glabra
<i>D. differens</i>	Molokai	Wet forest	Clermontia spp.
<i>D. digressa</i>	Hawai’i	Mesic to wet forest	Charpentiera spp., Pisonia spp.
<i>D. hemipeza</i>	O’ahu	Mesic forest	Cyanea spp., Lobelia spp., and Urera kaalae
<i>D. heteroneura</i>	Hawai’i	Mesic to wet forest	Cheirodendron spp., Clermontia spp., Delissea spp.
<i>D. montgomeryi</i>	O’ahu	Mesic forest	Urera kaalae
<i>D. mulli</i>	Hawai’i	Wet forest	Pritchardia beccariana
<i>D. musaphilia</i>	Kaua’i	Mesic forest	Acacia koa
<i>D. neoclavisetae</i>	Maui	Wet forest	Cyanea spp.
<i>D. obatai</i>	O’ahu	Dry to mesic forest	Chrysodracon spp.
<i>D. ochrobasis</i>	Hawai’i	Mesic to wet forest	Clermontia spp., Marattia spp., Myrsine spp.
<i>D. sharpi</i>	Kaua’i	Wet forest	Cheirodendron spp, Polyscias spp.
<i>D. substenoptera</i>	O’ahu	Wet forest	Cheirodendron spp, Polyscias spp.
<i>D. tarphytrichia</i>	O’ahu	Mesic forest	Charpentiera spp.



# Hawaiian yellow-faced bees ()

## Habitat:

Yellow-faced bees are found from the coast to montane ecosystems in Hawai'i . Coastal populations of yellow-faced bees occur in habitat along rocky shorelines with *Scaevola taccada* (naupaka) and *Heliotropium foertherianum* (tree heliotrope) with either landscaped vegetation, alien kiawe (*Prosopis pallida*), or bare rock inland. Bees are restricted to an extremely narrow corridor, typically 10–20 meters wide, and do not occur on sandy beaches or inland, or on landscaped native plants on hotel grounds. Documented nectar plants include naupaka, *Sida fallax* (ilima), *Chamaesyce* spp. (akoko), *Argemone glauca* (pua kala), *Myoporum sandwicense* (naio), and tree heliotrope.

*H. kuakea* has only been found at two sites in lowland mesic forest of the Wai'anāe Mountains. Little is known about its habitat needs and distribution within its range.

*H. mana* is restricted to a few populations in a narrow band of native mesic koa forest around 1,400 feet in elevation in the Ko'olau Mountains. Limited information suggests that it has a possible close association with *Santalum freycinetianum*.

Threats to yellow-faced bees include habitat destruction and modification from land use change, nonnative plants, ungulates, and fire, along with predation by nonnative ants and wasps.

Surveys for yellow-faced bees require a permit as identification of yellow-faced bees includes trapping, capturing, and holding. If the project has the potential for yellow-faced bee occurrence, consult with the Service.

## Avoidance and Minimization:

To avoid and minimize project impacts to yellow-faced bees and their nests, we recommend you incorporate the following applicable measures into your project plan:

*If an action will occur in or adjacent to known occupied habitat, a buffer area around the habitat may be required and can be worked out on a site-specific basis through consultation with the Service.*

*For coastal species, protect all coastal strand habitat from human disturbance, including:*

- No fires or wood collecting
- Leave woody debris in place
- Restrict vehicles to existing roads and trails
- Post educational signs to inform people of the presence of sensitive species.

## General species information (bold islands are known populations):

Species	Island(s)	Habitat
<i>H. anthracinus</i>	Hawai'i , Maui, 'Kaho'olawe, Lāna'i, Molokai, O'ahu	Coastal and lowland dry forests
<i>H. assimulans</i>	Maui, Kahoolawe, Lāna'i, O'ahu	Coastal and lowland dry forests
<i>H. facilis</i>	Maui, Lāna'i, <b>Molokai, O'ahu</b>	Coastal and dry and mesic shrublands and forests

<i>H. hiliaris</i>	Maui, Lānaʻi, <b>Molokai</b>	Coastal to dry forest; obligate parasite on <i>H. anthracinus</i> , <i>H. longiceps</i> , and <i>H. assimulans</i> .
<i>H. kuakea</i>	Oʻahu	Lowland mesic
<i>H. longiceps</i>	Maui, Lānaʻi, Molokai, Oʻahu	Coastal and dry shrubland
<i>H. mana</i>	Oʻahu	Lowland mesic; possible close association with <i>Santalum freycinetianum</i>

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## Endangered land snails ()

OAHA: *Achatinella* spp.

LANAI: *Partulina semicarinata* and *Partulina variabilis*

WEST MAUI: Newcomb's tree snail (*Newcombia cumingi*)

AMERICAN SAMOA: Tutuila tree snail (*Eua zebrina*) and the American Samoa land snail, Sisi or akaleha' (*Ostodes strigatus*)

### Habitat:

Surveys to determine if listed tree snails occur in a project area may require a permit from the Service. Check with the Service about what is required if surveys are needed. If permits are not needed, we offer the following recommendations.

**If listed tree snails may occur in the vicinity of the proposed project area, we offer the following recommendations to avoid potential adverse effects to listed tree snails:**

-Where work must be conducted in forested areas, survey proposed project sites for the presence of tree snails following the approved Service survey protocol (see separate document).

-If any tree snails are found, determine the extent of the colony by surveying outwards in all directions from the original sighting until individuals are no longer detected.

-Avoid cutting or removing vegetation within 200 feet of the known occurrence to minimize impacts to the tree snails and their habitat.

-Mark the trees and shrubs occupied by tree snails with brightly colored flagging tape and keep foot traffic to a minimum of 33 feet from marked vegetation to avoid inadvertently dislodging and trampling individuals.

-Avoid clearing understory and overstory forest vegetation outside existing developed areas. Intact vegetation is important for maintaining microclimates and air movement conditions that allow snails to survive in a given area.

-Confine movement of heavy equipment to existing roadways.

-If helicopters are used to reach the project site, avoid affecting the occupied site with helicopter rotor wash that could dislodge snails by selecting alternate landing areas.

-Train personnel who work in tree snail habitat to identify the listed species and their habitat.

**Hawai'i :** Hawaiian tree snails are found in montane wet forests, usually dominated by 'ōhi'a (*Metrosideros polymorpha*). Snails feed on fungi and algae that grow on the leaves of trees. *N. cumingi* is found nearly exclusively on 'ōhi'a, while other species can occur on a variety of predominately native, but also some non-native tree species. Common native species include *Broussaisia arguta*, *Psychotria* spp., *Melicope* spp., *Coprosma* spp., *Kadua* spp., *Antidesma* spp. and *Perrottetia sandwicensis*. Threats to tree snails include habitat destruction and fragmentation resulting from the impacts of nonnative ungulates such as pigs, goats, and deer, habitat modification due to invasive plants, and predation by nonnative mammals, reptiles, flatworms and snails. Wildfire is also a threat to the tree snails.

**American Samoa:** *Eua zebrina* is a tree snail found on the islands of Tutuila and Ofu, where they are found primarily on leaves of understory trees. Native forest canopy and understory is a critical need for this species, as all live snails have been found on understory plants beneath native canopy. *Ostodes strigatus* is a ground-dwelling snail found in rocky areas under relatively closed canopy with sparse understory. It is endemic to Tutuila. Closed canopies and areas with heavy tree cover appear to be an important habitat factor for this species. Threats include habitat destruction through agriculture, urban development and introduced ungulates, fire, predation by introduced rats and invertebrates, typhoons, public collection, and low numbers of individuals.

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## Endangered Aquatic invertebrates ()

KAUAI: Newcomb's snail (*Erinna newcombi*),

OAHU: crimson damselfly (*Megalagrion leptodemas*), blackline damselfly (*M.nigrohamatum nigrolineatum*), oceanic damselfly (*M. oceanicum*), and orange-black damselfly (*M. xanthomelas*)

MOLOKAI: Pacific damselfly (*M. pacificum*) and orange-black damselfly (*M. xanthomelas*)

LANAI: orange-black damselfly (*M. xanthomelas*)

MAUI: flying earwig damselfly (*M. nesiotetes*), Pacific damselfly (*M. pacificum*) and orange-black damselfly (*M. xanthomelas*); anchialine pool shrimp (*Procaris hawaiana*)

HAWAII: Pacific damselfly (*M. pacificum*) and orange-black damselfly (*M. xanthomelas*); anchialine pool shrimp (*Procaris hawaiana*) and (*Vetericaris chaceorum*)

### Snails -

Newcomb's snail is restricted to fast-flowing freshwater streams on Kaua'i, where it feeds on vegetation growing on submerged rocks. Threats to the species include reduced stream flow from drought, water diversion projects, or other natural and human causes; predation by introduced snails, flies, and aquatic species; and small population dynamics.

**We can also offer the following recommendations:**

- *The Service recommended Best Management Practice for Work in Aquatic Environments should be incorporated into the project plan to minimize the degradation of water quality and impacts to fish and wildlife resources.*

- *Permits are required for accurate surveys of this species, so consult with the Service if work will be done in proximity to stream areas or within water bodies or near critical habitat.*

### Damselflies –

Hawaiian damselflies are found in aquatic habitats across the islands, with high species endemism within islands. Breeding habitat includes anchialine pools, perennial streams, marshes, ponds, and even artificial pools and seeps. Major threats include introduced fish, amphibians, and invertebrates in streams, reduced stream flow from drought and water diversion, small isolated populations, reduced habitat quality from ungulates and nonnative plants, and possibly overcollection.

**All of the species are site specific, so check for detailed locations if stream work is occurring.**

*M. leptodemas* breeds in slow reaches of streams and seep-fed pools.

*M. nesiotetes* is found along one stream on Maui (formerly on Hawaii as well). Naiads may be terrestrial or semi-terrestrial and the species appears to be closely associated with uluhe.

*M. nigrohamatum nigrolineatum* occurs in slow sections or pools along mid-reach and headwater sections of upland streams and seep-fed pools.

*M. oceanicum* is found in swiftly flowing sections of streams, usually amid rocks and gravel in stream riffles. Naiads can forage out of the stream on wet moss on rocks.

*M. pacificum* is found in seepage-fed pools cut off from the main stream channel, usually in areas with thick vegetation. Formerly found on all islands, now known from Molokai, Maui, and Hawaii Islands at low elevations.

*M. xanthomelas* is known from Hawaii, Maui, Lānaʻi, Molokai, Oʻahu, and formerly Kauaʻi. It breeds in a widespread number of sites, including anchialine pools, coastal wetlands, small streams, and artificial ponds at low elevations.

**We can also offer the following recommendations:**

- *The Service recommended BMPs for Work in Aquatic Environments should be incorporated into the project plan to minimize the degradation of water quality and impacts to fish and wildlife resources.*

- *You cannot survey for damselflies without a permit, as accurate identification requires trapping, capturing, and holding. If work is occurring within a stream or within the riparian zone, consult with the Service.*

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## Anchialine pool shrimp ()

### **Habitat:**

*P. hawaiiana* is restricted to a small number of anchialine pools on Hawaii and Maui, while *V. chaceorum* is found in only two anchialine pool areas of Hawaii. Threats to these species include habitat loss due to in-filling and bulldozing of anchialine pools, waste disposal including used oil and grease into pools, nonnative fish, human use of pools for bathing, water extraction, in-flow of fertilizer and pesticides, and collection for the aquarium trade.

If work is occurring within an anchialine pool, ground disturbance occurs near the pools that increases run-off, erosion, or sedimentation, or toxic organic or inorganic substances, or increases the opportunity for the introduction of non-native fish, if work is occurring around anchialine pools the following recommendations are provided:

The Service recommended BMPs for Work in Aquatic Environments should be incorporated into the project plan to minimize the degradation of water quality and impacts to fish and wildlife resources.

Surveying for these species requires a permit as identification of these species includes trapping, capturing, and holding.

### **Avoidance and Minimization:**

Protect anchialine pools (both in and around) from the following human disturbance:

- *Restrict vehicles to existing roads and trails*

- *Prevent trash, and other waste from entering into anchialine pools*

- *Avoid or limit to the maximum extent practicable entrance into the anchialine pools*
- *Install educational signs near anchialine pools to inform people of the presence of sensitive species and habitats.*



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## Exhibit 8: Explosive and Flammable Hazards

No Explosive or Flammable Hazards were identified in close proximity to the Site.

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## Exhibit 9: Farmlands Protection



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# Soil Map—Island of Oahu, Hawaii



MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Map Unit Polygons

Soil Map Unit Lines

Soil Map Unit Points

Special Point Features

Blowout

Borrow Pit

Clay Spot

Closed Depression

Gravel Pit

Gravelly Spot

Landfill

Lava Flow

Marsh or swamp

Mine or Quarry

Miscellaneous Water

Perennial Water

Rock Outcrop

Saline Spot

Sandy Spot

Severely Eroded Spot

Sinkhole

Slide or Slip

Sodic Spot

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

Spoil Area

Stony Spot

Very Stony Spot

Wet Spot

Other

Special Line Features

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service  
Web Soil Survey URL:  
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Island of Oahu, Hawaii  
Survey Area Data: Version 15, Jun 10, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jan 17, 2019—Mar 3, 2019

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

USDA  
Natural Resources  
Conservation Service

Web Soil Survey  
National Cooperative Soil Survey

8/26/2021  
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## Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
KsC	Koko silt loam, 6 to 12 percent slopes	0.2	34.6%
rRO	Rock outcrop	0.4	65.4%
<b>Totals for Area of Interest</b>		<b>0.6</b>	<b>100.0%</b>

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## Exhibit 10: Floodplain Management

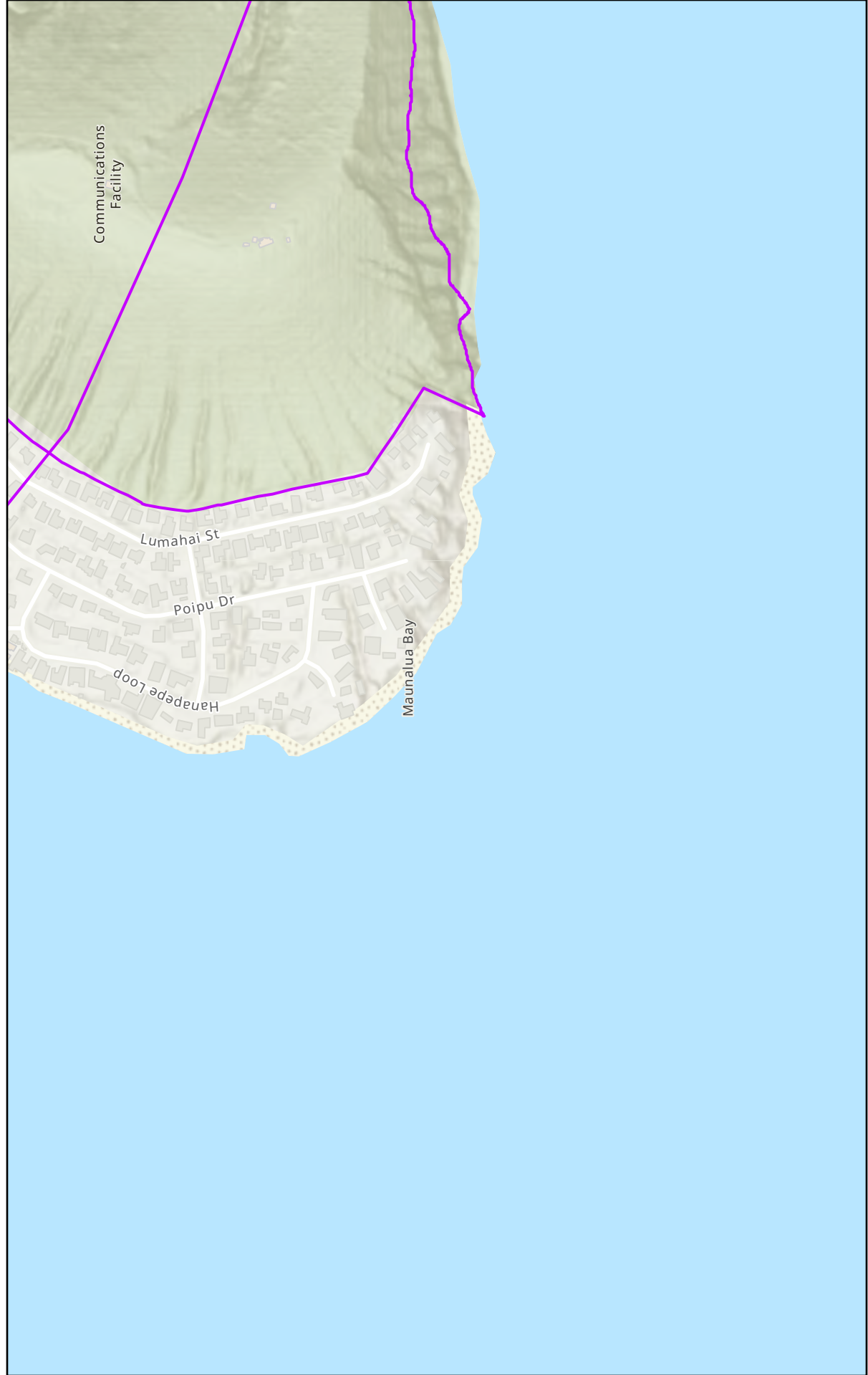
Please see Exhibit 3 - FEMA FIRM Map and EA text discussing flood plains.

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## Exhibit 11: Historic Preservation



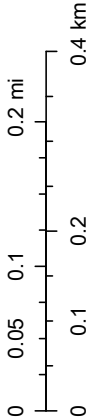
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8/26/2021

 Project Area of Potential Effect

1:9,028



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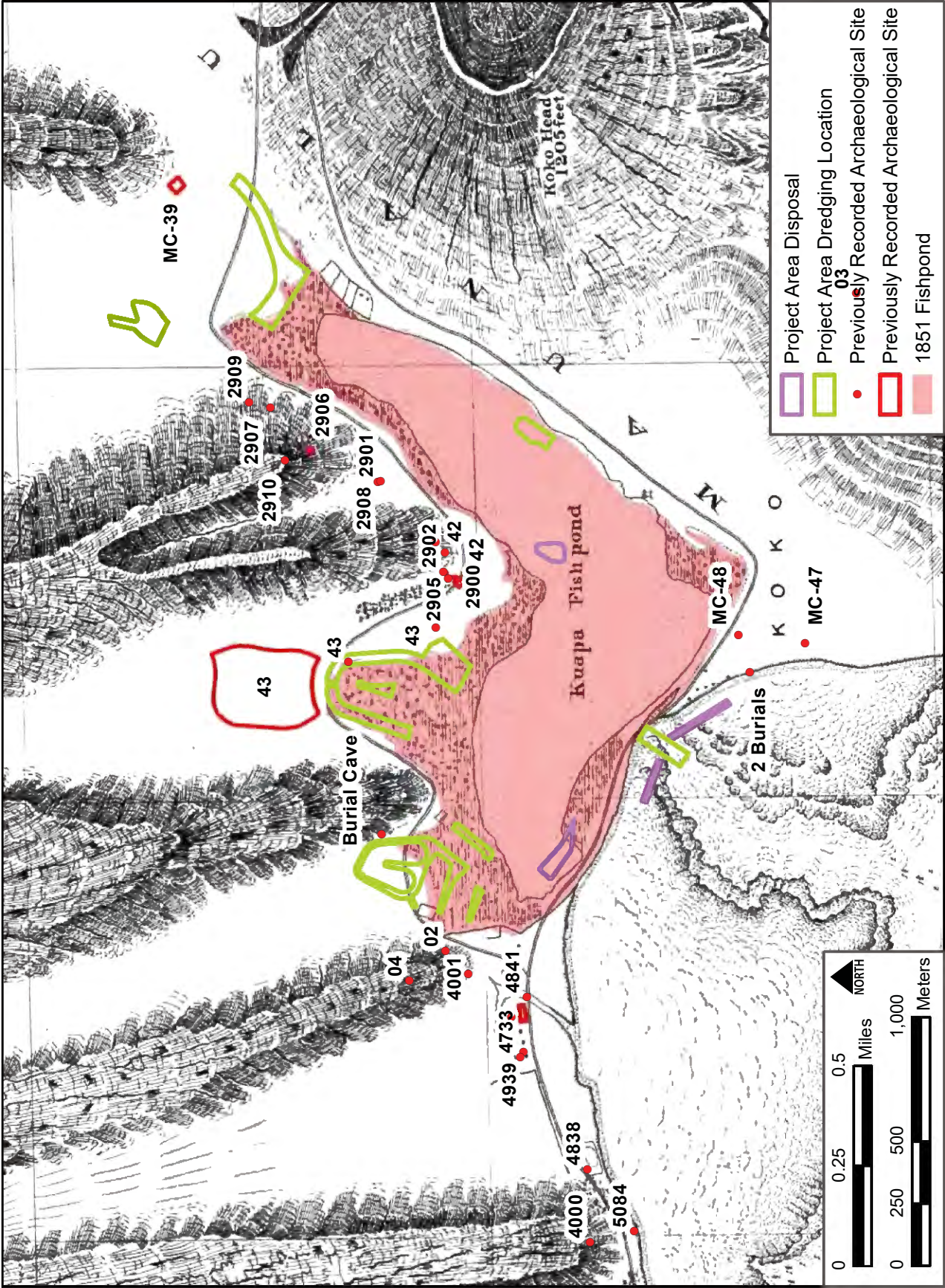


Figure 4. Oahu East Coast Including Waimanalo, Hanauma and Maunaloa Bays. Proposed project areas (APE) and previously recorded archaeological resources added; base map (Jackson 1884), project location data georeferenced (Anchor QEA, LP, 2010), archaeological site location data georeferenced from various sources.

The earliest archaeological investigations of sites on O‘ahu tended to emphasize *heiau* and other monumental or impressive sites. Table 2, below, briefly summarizes selected information for the *heiau* in the Hawai‘i Kai area.

Table 2. *Heiau* in areas near (outside) the project APE.

Recorder	Site No.	Date	Condition	Name/Purpose	Notes
McAllister	McAllister Site No. 22	1930*	Destroyed	Walled yard	“the Mann camp in the Bishop Estate Office marks the region” (Sterling and Summers 1978:262)
McAllister	McAllister No. 34	1930	Destroyed	Lookout for shipping canoes	“on the rim of the crater at its lowest elevation” (Sterling and Summers 1978:264)
McAllister	McAllister No. 39, Bishop Museum No. 01-A1-39??	1930	Partially Restored	Pahua/ husbandry	Located at the top of Makahuena Place - office of Hawaiian Affairs owns the land; excavated by Davis 1985, artifacts curated at U.H.
McAllister, Thrum	McAllister No. 42, State No. 50-80-15-0042	1930/1907	Portion destroyed in 2009	Hawea/ Hawea Drum	Unsure location, most likely either directly <i>mauka</i> or <i>makai</i> of Kaluanui Road, owner-Hawaii International Community Development Association (builder)
Dixon, Judd	“Probably Site 14” [Catherine C. Summer’s note]	1923	?		200 feet due south of the second wireless mast, east of the east corner of the 21.85-acre lot leased to the radio corporation (Judd 1923 in Sterling and Summers 1978:262)

\* McAllister visited the sites in 1930, although his report is dated 1933.

McAllister (1933) provides a synthesis of Judd’s and Thrum’s observations coupled with his own. He describes six archaeological sites, including two of the *heiau* listed in Table 2, in areas surrounding (outside) the project APE. Table 3 summarizes information concerning research completed at the six sites. Information concerning the locations of previous project areas and specific resource locations is recorded in Table 4 and illustrated in Figure 12.



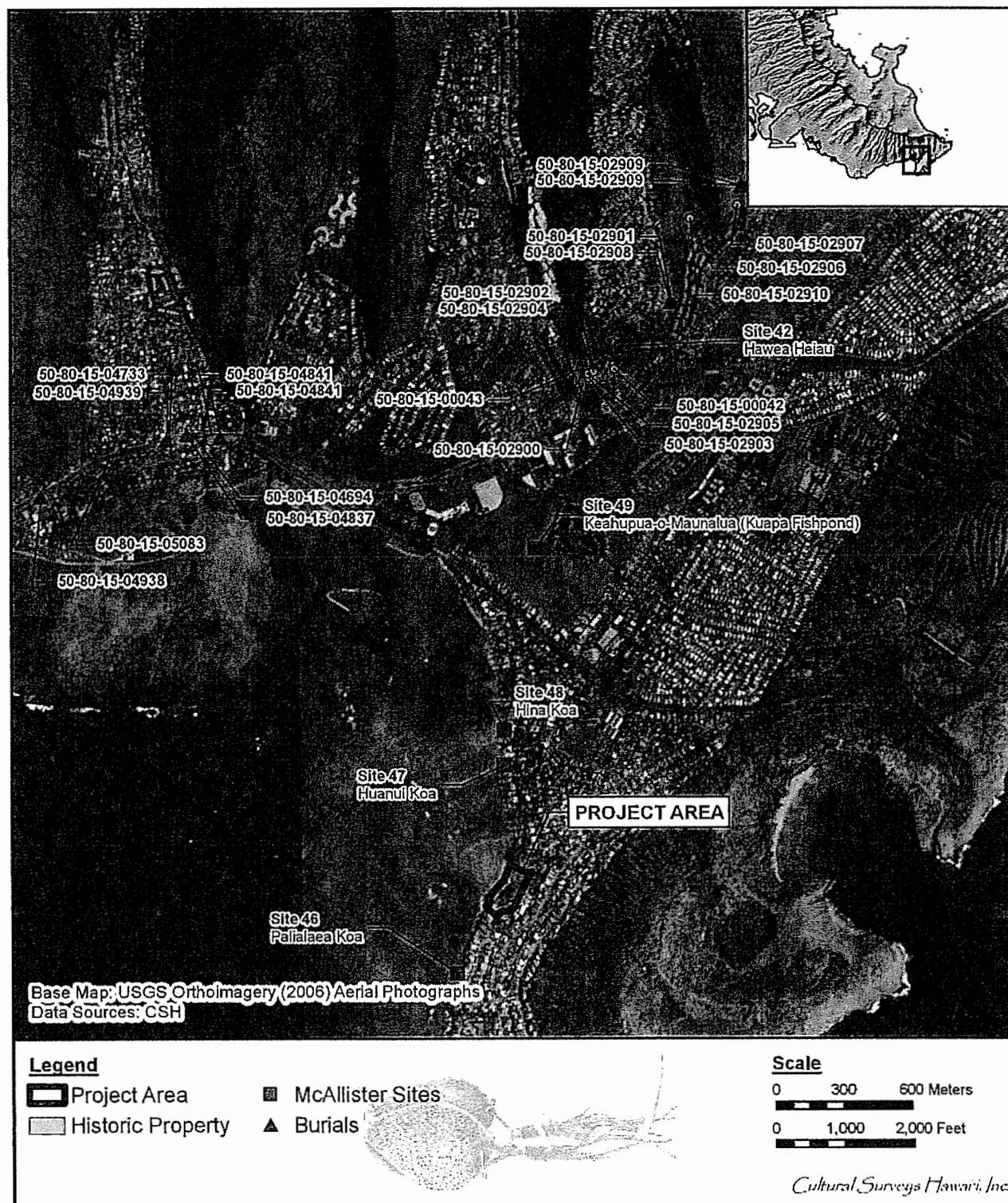


Figure 15. Archaeological sites in the vicinity of the project area

Table 1. Previous Archaeological Studies Located in the Vicinity of the Project Area

Reference	Type of Investigation	Location	Results
McAllister 1933	Island-wide Survey	O'ahu Island	Forty-nine sites were located within the Maunalua area; six sites were identified in proximity to the current study area: Site 42. Hawea Heiau Site 43. Dwelling site Site 46. Palialaea Ko'a Site 47. Huanui Ko'a Site 48. Hina Ko'a Site 49. Keahupua-o-Maunalua Fishpond (Kuapā)
Bayard 1969	Limited Survey, Mapping, and Excavations	Kaluanui Ridge at the Mouth of Haha'ione Valley	Site O-16 (McAllister Site 43) identified as a complex consisting of five rock shelters, several platforms, one well, and one enclosure (interpreted as a historic pigpen).
Price-Beggerly and McNeill 1985	Archaeological Reconnaissance	Kaluanui Ridge at the Mouth of Haha'ione Valley	Twelve historic properties were identified: SIHP # -2900, terraced platform with 15 associated petroglyphs; SIHP # -2901, natural stone cavity complex; SIHP # -2902, large cave (may correlate with Bayard's (1969) Feature E; SIHP # -2903, wall and possibly associated platform; SIHP # -2904, platform; SIHP # -2905, natural stone cavity; SIHP # -2906, modern habitation area; SIHP # -2907, modified cave complex; SIHP # -2908 correlates with Thomas (1995) Site O-5, above; SIHP # 2909, natural stone cavity with one historic burial; SIHP # -2910, cavity/cave complex with basalt flakes; SIHP # -0042, possible remnant of McAllister's (1933) Site 42, Hawea Heiau, above.

Reference	Type of Investigation	Location	Results
Carlson and Rosendahl 1990	Supplemental Archaeological Inventory Survey	TMK: (1) 3-9-008:013 por.	Survey entailed reevaluation of historic properties encountered within the Kaluanui 1 parcel during the Price-Beggerly and McNeill (1985) reconnaissance survey.
Folk et al. 1993	Archaeological Inventory Survey	TMK: (1) 3-9-008:013 por.	Survey recommended changing the functional interpretation of SIHP # 50-80-15-2900 from habitation platform to a temporary, open air, multi-use ridge site.
Schilz 1994	Archaeological Assessment	TMKs: (1) 3-9-008:013 por. and :040 por.	Study produced a composite map showing the location of McAllister's (1933) Site 42, Hawea Heiau and Price-Beggerly and McNeill's (1985) SIHP # -0042; determined that 50-80-15-2900, -2903, -2904, and 0042 were impacted or completely destroyed by grubbing activities.
Ogden Environmental 1994	Data Recovery Plan and Limited Subsurface Testing	TMK: (1) 3-9-008:039	Concluded that grubbing activities partially destroyed SIHP # -2900 Features 1 and 2. Conducted vegetation clearance which exposed a stone wall and a surface artifact scatter. Excavation of two test units documented a rich traditional Hawaiian cultural deposit.
Thomas 1995	Excavation Report	Toe of Kaluanui Ridge	Recorded Site O-5, rock shelter with temporary habitation/burial function; four human burials identified and later designated SIHP # 50-80-15-2908.
Jones 1996	Archaeological Inventory Survey	TMKs: (1) 3-9-008:013 por. and 3-9-010:001 por.	Three historic properties were identified within Kamilonui 1 parcel: SIHP # -4946, rock pile; SIHP # -4947, bedrock cavity containing one human molar; SIHP # -4948, historic rock wall.
Putzi et al. 1998	Archaeology Monitoring Report	Kalaniana'ole Highway between East Halema'uma'u Road and Keahole Street	Ten sites were identified during monitoring; seven of these sites (SIHP # -4694, -4733, 4837, 4841, 4938, 4939, and -5083 were in the Kuli'ou'ou to Maunalua area, including three single-burial sites, one burial ground/cultural deposit, and three historic cultural deposits.



Reference	Type of Investigation	Location	Results
O'Hare et al. 2003	Archaeological Assessment	TMK: (1) 3-9-008:042	Determined that SIHP # -2908 was no longer significant and recommended no further work.
Chiogioji and Hammatt 2005	Archaeological Literature Review and Field Inspection	Between Keāhole Street and Hawai'i Kai Drive	It is unlikely any subsurface historic properties are present beneath the highway, particularly on its <i>mauka</i> side where the improvement project was planned. Additionally, in light of the extensive dredging within the pond itself during the Hawai'i Kai development, it is unlikely that any of the original pond deposits remain undisturbed beneath the project area.
Moore et al. 2009	Archaeological Inventory Survey	TMK: (1) 3-9-008:039	Reevaluated two previously identified historic properties: SIHP # -0043, habitation complex under Criterion D; recommend no further work; SIHP # -2900, agricultural/habitation complex under Criterion C,D, and E; recommended for data recovery and preservation.

Table 2. Archaeological Sites in the Vicinity of the Project Area

Site Number	Site Type/Name	Location	Reference
42	Hāwea Heiau	At the intersection of Hawai'i Kai Drive and Keāhole Street, at the base of Kaluanui Ridge (Mariner's Ridge)	McAllister 1933
50-80-15-0042	Possible remnant of McAllister's (1933) Site 42, Hāwea Heiau, above	At the intersection of Hawai'i Kai Drive and Keāhole Street, at the base of Kaluanui Ridge (Mariner's Ridge)	Price-Beggerly and McNeill 1985; McAllister 1933
50-80-15-0043 (Bayard Site O-16)	Dwelling site (McAllister 1933); Habitation complex (Moore et al. 2009)	Kaluanui Ridge at the mouth of Haha'ione Valley	McAllister 1933; Moore et al. 2009
50-80-15-0043	Habitation complex	Kaluanui Ridge at the mouth of Haha'ione Valley	Moore et al. 2009
46	Fishing shrine ( <i>ko 'a</i> ) known as Palialaea	Portlock, western base of Koko Head	McAllister 1933

Site Number	Site Type/Name	Location	Reference
47	Fishing shrine ( <i>ko'a</i> ) known as Huanui	Portlock, western base of Koko Head	McAllister 1933
48	Fishing shrine ( <i>ko'a</i> ) known as Hina	Portlock, western base of Koko Head	McAllister 1933
49	Keahupua-o-Maunalua Fishpond (Kuapā)	Maunalua area, enclosed water inlet now referred to as Koko Marina	McAllister 1933
50-80-15-2900	Terraced platform with 15 associated petroglyphs (Price-Beggerly and McNeill 1985); Agricultural/habitation complex (Moore et al. 2009)	The southern terminus of Kaluanui Ridge	Moore et al. 2009; Price-Beggerly and McNeill 1985
50-80-15-2901	Natural stone cavity complex	The eastern slope of Kaluanui Ridge	Price-Beggerly and McNeill 1985
50-80-15-2902	Large cave (may correlate with Bayard's [1969] Feature E)	The southern terminus of Kaluanui Ridge	Price-Beggerly and McNeill 1985
50-80-15-2903	Wall and possibly associated platform	Kaluanui Ridge at the mouth of Haha'ione Valley	Price-Beggerly and McNeill 1985
50-80-15-2904	Platform	Kaluanui Ridge at the mouth of Haha'ione Valley	Price-Beggerly and McNeill 1985
50-80-15-2905	Natural stone cavity	The southern terminus of Kaluanui Ridge	Price-Beggerly and McNeill 1985
50-80-15-2906	Modern habitation site	The eastern slope of Kaluanui Ridge	Price-Beggerly and McNeill 1985
50-80-15-2907	Modified cave complex with basalt flakes	Kaluanui Ridge at the mouth of Haha'ione Valley	Price-Beggerly and McNeill 1985
50-80-15-2908 (initially Bayard Site O-5)	Habitation site; four human burials	Kaluanui Ridge at the mouth of Haha'ione Valley	Smart 1965; Bayard 1965; Thomas 1995
50-80-15-2909	Natural stone cavity with one historic burial	Kaluanui Ridge at the mouth of Haha'ione Valley	Price-Beggerly and McNeill 1985
50-80-15-2910	Cavity/cave complex with basalt flakes	The eastern slope of Kaluanui Ridge	Price-Beggerly and McNeill 1985
50-80-15-4694	Habitation – late pre-Contact to early historic	Kuli'ou'ou Ahupua'a, west of Kuli'ou'ou Stream	Putzi et al. 1998

Site Number	Site Type/Name	Location	Reference
50-80-15-4733	Historic trash pits	Kuli'ou'ou Ahupua'a, west of Kuli'ou'ou Road	Putzi et al. 1998
50-80-15-4837	Burial	Kuli'ou'ou Ahupua'a, west of Kuli'ou'ou Stream	Putzi et al. 1998
50-80-15-4841	Burials (30); pre-Contact to historic habitation site	Kuli'ou'ou Ahupua'a, between Kawaihae and Kuli'ou'ou Streets, east of Kuli'ou'ou Stream	Putzi et al. 1998
50-80-15-4938	Burial	Kuli'ou'ou Ahupua'a, west of Kuli'ou'ou Road	Putzi et al. 1998
50-80-15-4939	Burial	Kuli'ou'ou Ahupua'a, west of Kuli'ou'ou Road	Putzi et al. 1998
50-80-15-5083	Historic trash pit	Kuli'ou'ou Ahupua'a, west of Kuli'ou'ou Road	Putzi et al. 1998

Below the house foundation and on the edge of the former pond wall is an enclosure, possibly a pigpen, 17 by 30 feet with walls approximating 3.5 feet high. About 50 feet north of the pen is a brackish well 3 feet in diameter with 3 feet of water. The sides have been faced with stones. As this is a low marshy region almost any such depression would be filled with water. [McAllister 1933:67]

#### Site 46 Palialaea

Fishing shrine (ko'a) known as Palialaea, for mullet. The shrine was at the edge of the water.

#### Site 47. Huanui

Fishing shrine (ko'a) known as Huanui, for mullet. The shrine is not far from the one described in Site 48 and is an exact duplicate, except that it is slightly larger.

#### Site 48. Hina

Fishing shrine (ko'a) on the beach, Honolulu side of Kuamoekane, known as Hina and built for scad (*akule*). The shrine is roughly square in shape with the corners rounded, and measures 16.5 feet across. It is formed by coral walls 1 foot high and from 1 to 2 feet wide. Inside the walls is a paving of small bits of coral and sand which is about 6 inches higher than the outside. Facing the sea is an entrance 2.5 feet wide. Just within the entrance are six sharp lava stones forming an oval about 1 foot wide and 1.5 feet long. It was here that the offering of fish was placed. A foot from the wall opposite the entrance are two coral stones embedded in the paving. They protrude about 6 inches.

#### Site 49. Keahupua-o-Maunaloa fishpond

According to the Webster map of 1851 the pond covered 523 acres. In 1921 the water area was 301 acres with a swamp land of 125 acres. The water is brackish.

## Exhibit 12: Noise Abatement and Control

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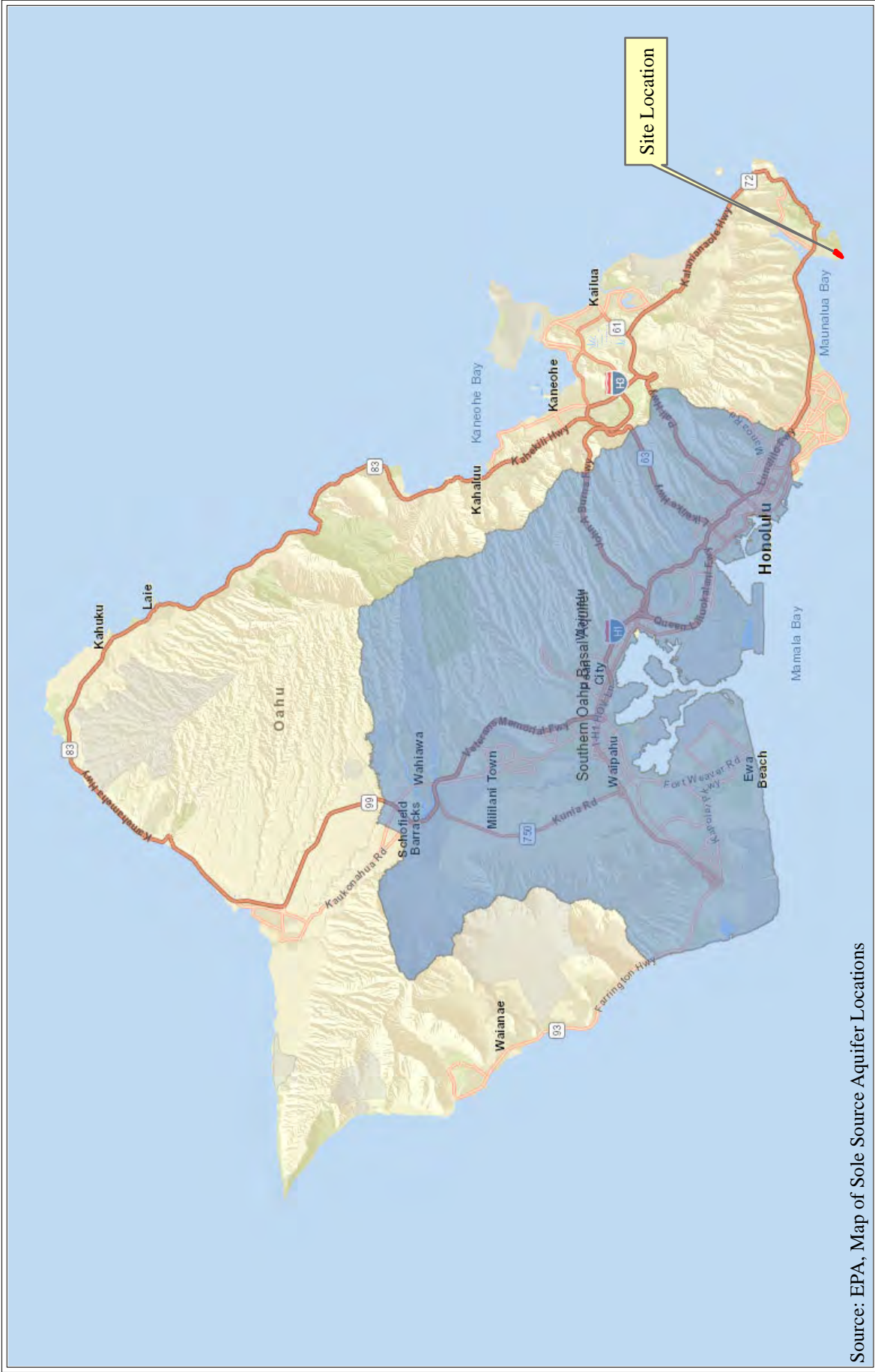


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### Exhibit 13: Sole Source Aquifers/Safe Drinking Water



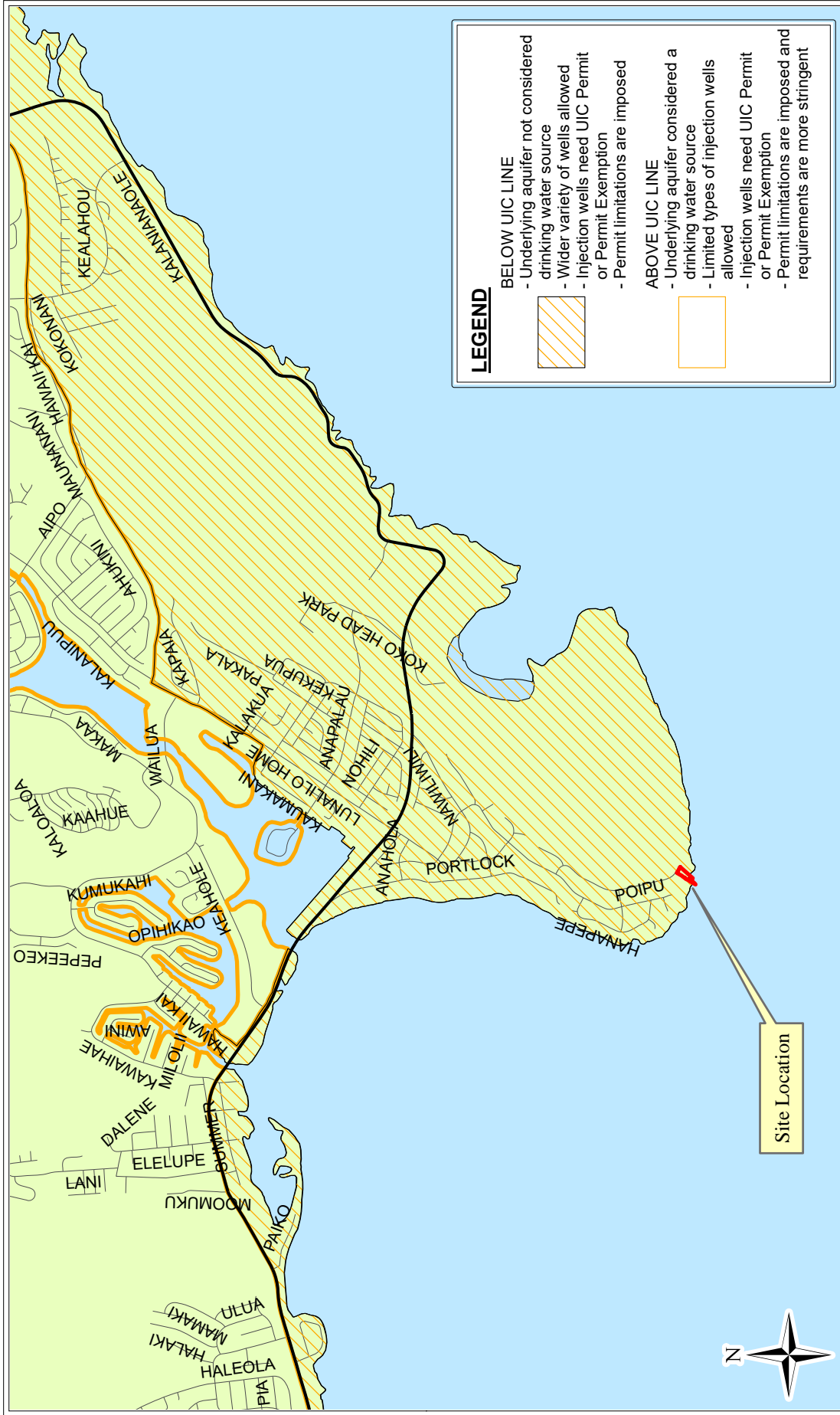
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Source: EPA, Map of Sole Source Aquifer Locations

<p><b>PROJECT NAME:</b>  Environmental Assessment  4 Lumahai Street  Honolulu, Hawaii 96825  Tax Map Key 3-9-013:32</p>	<p><b>EXHIBIT TITLE:</b>  Sole Source Aquifer Map</p>	<p><b>EXHIBIT NUMBER:</b>  13</p>
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<p><b>EXHIBIT TITLE:</b></p> <p>Underground Injection Control Map</p>	<p><b>PROJECT NAME:</b></p> <p>Environmental Assessment 4 Lumahai Street Honolulu, Hawaii 96825 Tax Map Key 3-9-013:32</p>	<p><b>Environmental Risk Analysis</b></p>
<p><b>EXHIBIT NUMBER:</b></p> <p>13</p>		

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Your Location

The water serving \_\_\_\_\_ has been tested and meets all Federal and State standards.

The water quality monitoring results are presented below.

The water sources serving this address are:

Source Name	Origin of Water	Treatment	Region
a) Aina Koa Well II	Groundwater	Chlorination	1
b) Halawa Shaft	Groundwater	Chlorination	1
c) Kaimuki Pumping Station Low Service	Groundwater	Chlorination	1
d) Kalihi Shaft	Groundwater	Chlorination	1
e) Punanani Wells	Groundwater	Chlorination	1
f) Wilder Wells	Groundwater	Chlorination	1

Source Water Monitoring

The substances detected in these sources are shown below. If a substance is not shown, then it was not detected.

Regulated Contaminants (2)

Contaminant	Sample Year	Unit	Highest Average	Range		MCL (Allowed)	MCLG (Goal)	Found in Sources
Barium Chlordane Chromium Fluoride Nitrate	2020	ppm	0.016	Minimum	Maximum	2.000	2.000	b,d,e
	2020	ppb	0.140	0.140	0.140	2.000	0.000	c
	2020	ppb	2.400	1.200	2.400	100.000	100.000	b,c,d,e,f
	2020	ppm	0.058	0.058	0.058	4.000	4.000	f
	2020	ppm	0.630	0.330	0.630	10.000	10.000	b,c,d,e,f

Definitions:

MCL	Maximum Contaminant Level. The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology.
MCLG	Maximum Contaminant Level Goal. The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allows for a margin of safety.
GAC	Granular Activated Carbon Filtration
Health Advisory	An estimate of acceptable drinking water levels for a chemical substance based on health effects information. Health advisory is not a legally enforceable standard.
CFU/100ml	Colony forming units per 100 milliliter
mrem/yr	Millirems Per Year (A measure of Radiation)
pCi/L	Pico curies Per Liter (A measure of Radioactivity)
ppb	Parts per billion or Micrograms per Liter
ppm	Parts per million or Milligrams per liter
ppt	Parts per Trillion or Nanograms per liter
NQ	Not Quantifiable (<means "less than")
NYA	Not Yet Applicable
N/A	Not Applicable
ND	Not Detected
*	EPA considers 50 pCi/L to be the level of concern for beta particles
(1)	Analysis by the State of Hawaii Department of Health
(2)	Analysis by the Honolulu Board Of Water Supply. Questions, call 748-5370.
LRAA	Analysis by the Honolulu Board Of Water Supply. Questions, call 748-5370.
MRDL	Maximum residual disinfectant level: The highest level of a disinfectant allowed in drinking water.
MRDLG	Maximum residual disinfectant level goal: The level of a drinking water disinfectant below which there is no known or expected risk to health.

Unregulated Contaminants (Do not have designated maximum limits but require monitoring)

Contaminant	Tested By	Sample Year	Unit	Highest Average	Range		Health Advisory	Found in Sources
Chlorate	(2)	2020	ppb	67.000	26.000	67.000	210.000	b,c,d,e,f
Chloride	(2)	2020	ppm	150.000	68.000	150.000	250 **	b,c,d,e,f
Chromium, Hexavalent	(2)	2020	ppb	2.600	1.400	2.600	13.000	b,c,d,e,f
Dieldrin	(2)	2020	ppb	0.046	0.046	0.046	0.200	c
Manganese	(2)	2018	ppb	1.295	0.470	1.600	50.000	e,f
Sodium	(2)	2020	ppm	52.000	35.000	52.000	60.000	b,c,d,e,f
Strontium	(2)	2020	ppb	210.000	45.000	210.000	4000.000	b,c,d,e,f
Sulfate	(2)	2020	ppm	26.000	8.500	26.000	250 **	b,c,d,e,f
Vanadium	(2)	2020	ppb	12.000	7.400	12.000	21.000	b,c,d,e,f

\*\*Secondary Maximum Containment Levels (SMCLs) are standards established as guidelines to assist public water systems in managing the aesthetics quality (taste, odor, and color) of drinking water. EPA does not enforce SMCLs.

Distribution System Monitoring  
Disinfection By-Products (2)

System Name	Contaminant	Unit	Min	Max	Highest LRAA	MCL (Allowed)	MCLG (Goal)
Honolulu-Windward-Pearl Harbor	Total Trihalomethanes	ppb	0.00	13.00	8.50	80	None
	Haloacetic Acids (HAA5)	ppb	0.00	2.20	0.70	60	None
		Unit	Min	Max	Average	MCL (Allowed)	MCLG (Goal)
	Haloacetic Acids (HAA6BR)	ppb	0.00	1.50	0.82	NYA	NYA
	Haloacetic Acids (HAA9)	ppb	0.00	1.50	0.82	NYA	NYA
		Unit	Min	Max	Average	MCL (Allowed)	MCLG (Goal)

Microbial Contaminants (2)

System Name	Contaminant	Number of positive E. coli samples found	Violation (Yes/No)	Number of assessments required to perform		Major sources in drinking water	
Honolulu-Windward-Pearl Harbor	E. Coli	0	No	0	0	Human and animal fecal waste	

Level 1 Assessment: A Level 1 assessment is a study of the water system to identify potential problems and determine (if possible) why total coliform bacteria have been found in our water system.

Level 2 Assessment: A Level 2 assessment is a very detailed study of the water system to identify potential problems and determine (if possible) why an E. coli MCL violation has occurred and/or why total coliform bacteria have been found in our water system on multiple occasions.

Residual Chlorine (2)

System Name	Sample Year	Unit	Lowest Monthly Average	Highest Monthly Average	Running Annual Average	MRDL	MRDLG
Honolulu-Windward-Pearl Harbor	2020	ppm	0.29	0.33	0.30	4	4

Lead/Copper Testing (2)

Contaminant	Sample Year	Unit	90th Percentile Reading	Action Level	# Samples Above Action Level
Copper	2018	ppm	0.029	1.300	0
Lead	2018	ppb	<1.000	15.000	0

No violations found for calendar year 2020

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## Exhibit 14: Wetlands Protection



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<p><b>PROJECT NAME:</b> Environmental Assessment 4 Lumahai Street Honolulu, Hawaii 96825 Tax Map Key 3-9-013:32</p>	<p><b>EXHIBIT TITLE:</b></p>	<p>Wetlands Map</p>
	<p><b>EXHIBIT NUMBER:</b></p>	<p>14</p>



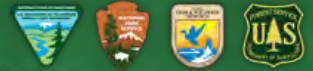
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## Exhibit 15: Wild and Scenic Rivers

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# NATIONAL WILD AND SCENIC RIVERS SYSTEM

[NATIONAL SYSTEM](#)[MANAGEMENT](#)[RESOURCES](#)[PUBLICATIONS](#)[CONTACT US](#)[50 YEARS](#)[SITE INDEX](#)

## HAWAII

Hawaii has approximately 3,905 miles of river, but no designated wild & scenic rivers.

[+ View larger map](#)

Hawaii does not have any designated rivers.

### EXPLORE DESIGNATED RIVERS

 Choose A State  Choose A River 

Dark and foreboding one minute, sun-drenched and exploding with color the next, tropical rivers span every mood.

[NATIONWIDE RIVERS INVENTORY](#)[CONTACT US](#)[PRIVACY NOTICE](#)[Q & A SEARCH ENGINE](#)[SITE MAP](#)

Designated Rivers	National System	River Management	Resources
About WSR Act State Listings Profile Pages	WSR Table Study Rivers Stewardship WSR Legislation	Council Agencies Management Plans River Mgt. Society GIS Mapping	Q & A Search Bibliography Publications GIS Mapping Logo & Sign Standards

## Exhibit 16: Environmental Justice



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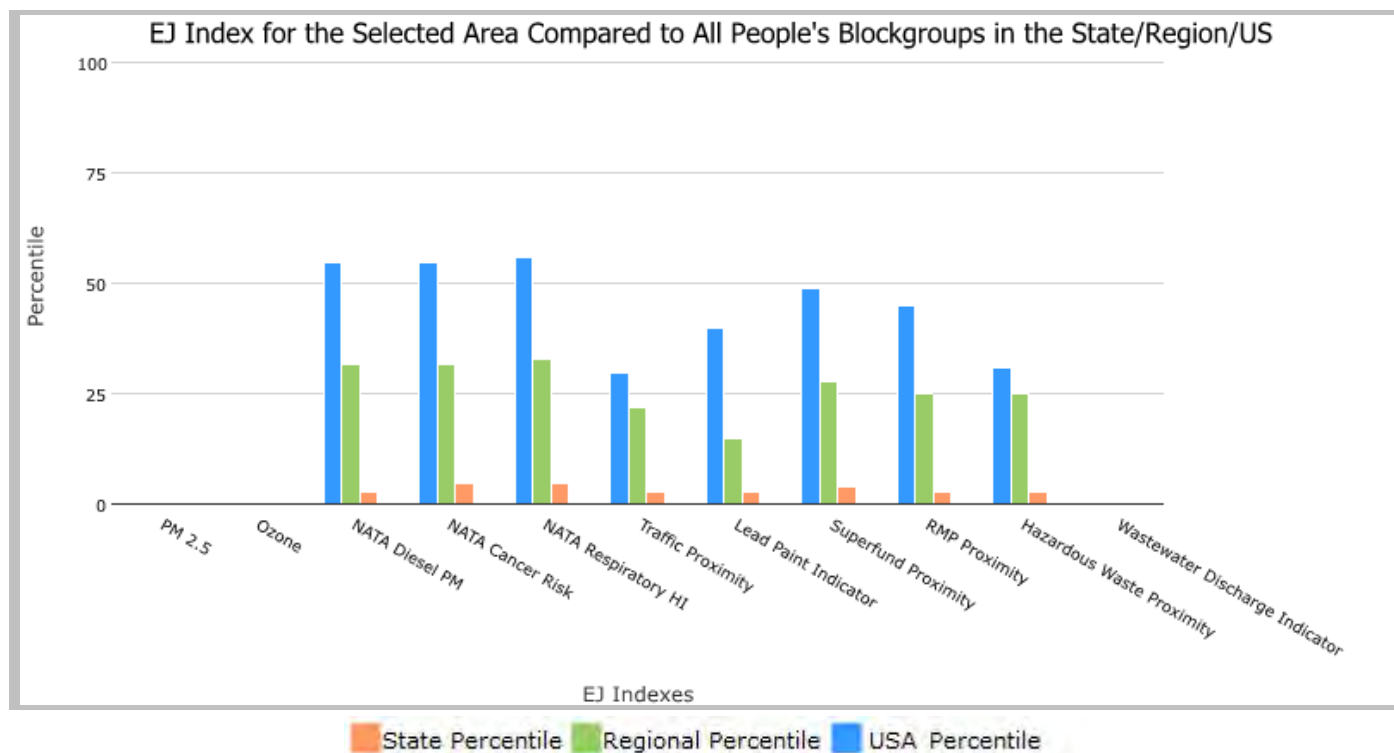
1 mile Ring Centered at 21.259896,-157.707466, HAWAII, EPA Region 9

Approximate Population: 1,249

Input Area (sq. miles): 3.14

4 Lumahai (The study area contains 2 blockgroup(s) with zero population.)

Selected Variables	State Percentile	EPA Region Percentile	USA Percentile
<b>EJ Indexes</b>			
EJ Index for PM2.5	N/A	N/A	N/A
EJ Index for Ozone	N/A	N/A	N/A
EJ Index for NATA* Diesel PM	3	32	55
EJ Index for NATA* Air Toxics Cancer Risk	5	32	55
EJ Index for NATA* Respiratory Hazard Index	5	33	56
EJ Index for Traffic Proximity and Volume	3	22	30
EJ Index for Lead Paint Indicator	3	15	40
EJ Index for Superfund Proximity	4	28	49
EJ Index for RMP Proximity	3	25	45
EJ Index for Hazardous Waste Proximity	3	25	31
EJ Index for Wastewater Discharge Indicator	N/A	N/A	N/A



This report shows the values for environmental and demographic indicators and EJSCREEN indexes. It shows environmental and demographic raw data (e.g., the estimated concentration of ozone in the air), and also shows what percentile each raw data value represents. These percentiles provide perspective on how the selected block group or buffer area compares to the entire state, EPA region, or nation. For example, if a given location is at the 95th percentile nationwide, this means that only 5 percent of the US population has a higher block group value than the average person in the location being analyzed. The years for which the data are available, and the methods used, vary across these indicators. Important caveats and uncertainties apply to this screening-level information, so it is essential to understand the limitations on appropriate interpretations and applications of these indicators. Please see EJSCREEN documentation for discussion of these issues before using reports.

1 mile Ring Centered at 21.259896,-157.707466, HAWAII, EPA Region 9

Approximate Population: 1,249

Input Area (sq. miles): 3.14

4 Lumahai (The study area contains 2 blockgroup(s) with zero population.)



Sites reporting to EPA	
Superfund NPL	0
Hazardous Waste Treatment, Storage, and Disposal Facilities (TSDF)	0

## EJSCREEN Report (Version 2020)



1 mile Ring Centered at 21.259896,-157.707466, HAWAII, EPA Region 9

Approximate Population: 1,249

Input Area (sq. miles): 3.14

4 Lumahai (The study area contains 2 blockgroup(s) with zero population.)

Selected Variables	Value	State Avg.	%ile in State	EPA Region Avg.	%ile in EPA Region	USA Avg.	%ile in USA
<b>Environmental Indicators</b>							
Particulate Matter (PM 2.5 in $\mu\text{g}/\text{m}^3$ )	N/A	N/A	N/A	9.99	N/A	8.55	N/A
Ozone (ppb)	N/A	N/A	N/A	50.1	N/A	42.9	N/A
NATA* Diesel PM ( $\mu\text{g}/\text{m}^3$ )	0.0814	0.164	45	0.479	<50th	0.478	<50th
NATA* Cancer Risk (lifetime risk per million)	11	14	36	35	<50th	32	<50th
NATA* Respiratory Hazard Index	0.12	0.16	35	0.53	<50th	0.44	<50th
Traffic Proximity and Volume (daily traffic count/distance to road)	320	1200	49	1700	33	750	58
Lead Paint Indicator (% Pre-1960 Housing)	0.15	0.16	58	0.24	52	0.28	46
Superfund Proximity (site count/km distance)	0.032	0.097	31	0.15	22	0.13	28
RMP Proximity (facility count/km distance)	0.25	0.39	58	0.99	35	0.74	44
Hazardous Waste Proximity (facility count/km distance)	1.3	3.2	42	5.3	25	5	56
Wastewater Discharge Indicator (toxicity-weighted concentration/m distance)	N/A	37	N/A	18	N/A	9.4	N/A
<b>Demographic Indicators</b>							
Demographic Index	30%	50%	4	46%	26	36%	50
People of Color Population	54%	78%	11	60%	42	39%	68
Low Income Population	7%	23%	9	33%	7	33%	8
Linguistically Isolated Population	2%	6%	40	8%	29	4%	56
Population With Less Than High School Education	2%	8%	13	16%	10	13%	11
Population Under 5 years of age	9%	6%	83	6%	80	6%	81
Population over 64 years of age	27%	17%	87	14%	91	15%	90

\* The National-Scale Air Toxics Assessment (NATA) is EPA's ongoing, comprehensive evaluation of air toxics in the United States. EPA developed the NATA to prioritize air toxics, emission sources, and locations of interest for further study. It is important to remember that NATA provides broad estimates of health risks over geographic areas of the country, not definitive risks to specific individuals or locations. More information on the NATA analysis can be found at: <https://www.epa.gov/national-air-toxics-assessment>.

For additional information, see: [www.epa.gov/environmentaljustice](https://www.epa.gov/environmentaljustice)

EJSCREEN is a screening tool for pre-decisional use only. It can help identify areas that may warrant additional consideration, analysis, or outreach. It does not provide a basis for decision-making, but it may help identify potential areas of EJ concern. Users should keep in mind that screening tools are subject to substantial uncertainty in their demographic and environmental data, particularly when looking at small geographic areas. Important caveats and uncertainties apply to this screening-level information, so it is essential to understand the limitations on appropriate interpretations and applications of these indicators. Please see EJSCREEN documentation for discussion of these issues before using reports. This screening tool does not provide data on every environmental impact and demographic factor that may be relevant to a particular location. EJSCREEN outputs should be supplemented with additional information and local knowledge before taking any action to address potential EJ concerns.

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## Exhibit 17: Consultation Letters

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## BOARD OF WATER SUPPLY

CITY AND COUNTY OF HONOLULU  
630 SOUTH BERETANIA STREET  
HONOLULU, HI 96843  
[www.boardofwatersupply.com](http://www.boardofwatersupply.com)



October 28, 2021

RICK BLANGIARDI, MAYOR

BRYAN P. ANDAYA, Chair  
KAPUA SPROAT, Vice Chair  
RAY C. SOON  
MAX J. SWORD  
NA'ALEHU ANTHONY

JADE T. BUTAY, Ex-Officio  
ROGER BABCOCK, Jr., Ex-Officio

ERNEST Y. W. LAU, P.E.  
Manager and Chief Engineer

ELLEN E. KITAMURA, P.E.  
Deputy Manager and Chief Engineer

Mr. Russell Okoji  
Environmental Risk Analysis, LLC  
905-A Makahiki Way  
Honolulu, Hawaii 96826

Dear Mr. Okoji:

**Subject: Letter Dated October 13, 2021 Requesting Comments on the Draft Environmental Assessment of the Proposed Wheatley Single-Family Residence Replacement at 4 Lumahai Street – Tax Map Key: 3-9-012: 032**

---

Thank you for the opportunity to comment on the proposed single-family home replacement.

The existing water system is adequate to accommodate the domestic water demands and off-site fire protection of the proposed development. However, please be advised that this information is based upon current data, and therefore, the Board of Water Supply reserves the right to change any position or information stated herein up until the final approval of the building permit application. The final decision on the availability of water will be confirmed when the building permit application is submitted for approval.

When water is made available, the applicant will be required to pay our Water System Facilities Charges for resource development, transmission, and daily storage.

Water conservation measures are required for all proposed developments. These measures include utilization of nonpotable water for irrigation using rain catchment, drought tolerant plants, xeriscape landscaping, efficient irrigation systems, such as a drip system and moisture sensors, and the use of Water Sense labeled ultra-low flow water fixtures and toilets.

The on-site fire protection requirements should be coordinated with the Fire Prevention Bureau of the Honolulu Fire Department.

If you have any questions, please contact Robert Chun, Project Review Branch of our Water Resources Division at (808) 748-5443.

Very truly yours,

ERNEST Y. W. LAU, P.E.  
Manager and Chief Engineer

cc: Steve Tagawa (DPP-Land Use Approval Branch)





January 17, 2022

City and County of Honolulu  
Board of Water Supply  
630 South Beretania Street  
Honolulu, Hawaii 96843

**Subject: Draft Environmental Assessment (EA)**  
**4 Lumahai Street**  
**Honolulu, HI 96825**  
**Tax Map Key 3-9-013: 032**

---

Dear Mr. Lau, P.E.:

Thank you for your comment letter, dated October 28, 2021, in response to the above project. We acknowledge that there are no comments as the existing water system is adequate to accommodate the domestic water demands and off-site fire protection of the proposed development. We also acknowledge that the Board of Water Supply reserved the right to change position based on current data until at the time of building permit approval. When water is made available the applicant will be required to pay the Water Systems Facilities Charges for resource development, transmission, and daily storage.

The Environmental Assessment included that all developments are required to implement water conservation measures including nonpotable water for irrigation such as rain catchment systems, drought tolerant plants, xeriscape landscaping, efficient irrigation systems, and use of ultra-low flow water fixtures and toilets.

Sincerely,

A handwritten signature in black ink, appearing to read "Vincent Yanagita", written over a series of horizontal lines.

Vincent Yanagita  
Principal Scientist

**Standard Comments for Land Use Reviews**  
**Clean Air Branch**  
**Hawaii State Department of Health**

If your proposed project:

Requires an Air Pollution Control Permit

You must obtain an air pollution control permit from the Clean Air Branch and comply with all applicable conditions and requirements. If you do not know if you need an air pollution control permit, please contact the Permitting Section of the Clean Air Branch.

Includes construction or demolition activities that involve asbestos

You must contact the Asbestos Abatement Office in the Indoor and Radiological Health Branch.

Has the potential to generate fugitive dust

You must control the generation of all airborne, visible fugitive dust. Note that construction activities that occur near to existing residences, business, public areas and major thoroughfares exacerbate potential dust concerns. It is recommended that a dust control management plan be developed which identifies and mitigates all activities that may generate airborne, visible fugitive dust. The plan, which does *not* require Department of Health approval, should help you recognize and minimize potential airborne, visible fugitive dust problems.

Construction activities must comply with the provisions of Hawaii Administrative Rules, §11-60.1-33 on Fugitive Dust. In addition, for cases involving mixed land use, we strongly recommend that buffer zones be established, wherever possible, in order to alleviate potential nuisance complaints.

You should provide reasonable measures to control airborne, visible fugitive dust from the road areas and during the various phases of construction. These measures include, but are not limited to, the following:

- a) Planning the different phases of construction, focusing on minimizing the amount of airborne, visible fugitive dust-generating materials and activities, centralizing on-site vehicular traffic routes, and locating potential dust-generating equipment in areas of the least impact;
- b) Providing an adequate water source at the site prior to start-up of construction activities;
- c) Landscaping and providing rapid covering of bare areas, including slopes, starting from the initial grading phase;
- d) Minimizing airborne, visible fugitive dust from shoulders and access roads;
- e) Providing reasonable dust control measures during weekends, after hours, and prior to daily start-up of construction activities; and
- f) Controlling airborne, visible fugitive dust from debris being hauled away from the project site.

If you have questions about fugitive dust, please contact the Enforcement Section of the Clean Air Branch

Clean Air Branch (808) 586-4200 <a href="mailto:cab@doh.hawaii.gov">cab@doh.hawaii.gov</a>	Indoor Radiological Health Branch (808) 586-4700
--	---

April 1, 2019



January 18, 2022

State of Hawaii  
Clean Air Branch  
2827 Waimano Home Rd #130  
Pearl City, HI 96782

**Subject: Draft Environmental Assessment (EA)**  
**4 Lumahai Street**  
**Honolulu, HI 96825**  
**Tax Map Key 3-9-013: 032**

---

To Whom in May Concern:

Thank you for your Standard Comments for Land Use Review, dated April 1, 2019, in response to the above project. Below is a summary of the responses to the comments received.

1. Requires an Air Pollution Control Permit

You must obtain an air pollution control permit from the Clean Air Branch and comply with all applicable conditions and requirements. If you do not know if you need an air pollution control permit, please contact the Permitting Section of the Clean Air Branch.

*At this time, it is not anticipated that an air pollution control permit will be required.*

2. Includes construction or demolition activities that involve asbestos You must contact the Asbestos Abatement Office in the Indoor and Radiological Health Branch..

*Demolition of the existing structure will comply with all required waste handling regulations including proper removal of any identified hazardous materials including asbestos, if identified.*

3. Has the potential to generate fugitive dust

You must control the generation of all airborne, visible fugitive dust. Note that construction activities that occur near to existing residences, business, public areas and major thoroughfares exacerbate potential dust concerns. It is recommended that a dust control management plan be developed which identifies and mitigates all activities that may generate airborne, visible fugitive dust. The plan, which does not require Department of Health approval, should help you recognize and minimize potential airborne, visible fugitive dust problems.

Construction activities must comply with the provisions of Hawaii Administrative Rules, §11-60.1-33 on Fugitive Dust. In addition, for cases involving mixed land use, we strongly recommend that buffer zones be established, wherever possible, in order to alleviate potential nuisance complaints.

You should provide reasonable measures to control airborne, visible fugitive dust from the road areas and during the various phases of construction. These measures include, but are not limited to, the following:

- a) Planning the different phases of construction, focusing on minimizing the amount of airborne, visible fugitive dust-generating materials and activities, centralizing on-site vehicular traffic routes, and locating potential dust-generating equipment in areas of the least impact;
- b) Providing an adequate water source at the site prior to start-up of construction activities;
- c) Landscaping and providing rapid covering of bare areas, including slopes, starting from the initial grading phase;
- d) Minimizing airborne, visible fugitive dust from shoulders and access roads;
- e) Providing reasonable dust control measures during weekends, after hours, and prior to daily start-up of construction activities; and
- f) Controlling airborne, visible fugitive dust from debris being hauled away from the project site..

*Dust control measures, in compliance with Section 11-60.1-33, "Fugitive Dust", of HAR will be implemented during all phases of construction. Use of BMPs (i.e., watering of roads and trenches during project activities, use of a dust screen which surrounds the project area) would reduce any impacts to less than significant. Added the above recommended measures to Section 5.1.7 which may also be considered during construction.*

Thank you for the comments.

Sincerely,

A handwritten signature in black ink, appearing to read 'Vincent Yanagita', with a long, sweeping horizontal stroke extending to the right.

Vincent Yanagita  
Principal Scientist

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DAVID Y. IGE  
GOVERNOR



CURT T. OTAGURO  
COMPTROLLER  
  
AUDREY HIDANO  
DEPUTY COMPTROLLER

**STATE OF HAWAII**  
**DEPARTMENT OF ACCOUNTING AND GENERAL SERVICES**  
P O BOX 119, HONOLULU, HAWAII 96810-0119

(P)21 177

**OCT 21 2021**

Ms. Rachel Okoji, M.S., President  
Environmental Risk Assessment, LLC  
905A Makahiki Way  
Honolulu, Hawaii 96826

Dear Ms. Okoji:

Subject: Draft Environmental Assessment for  
4 Lumahai Street Residence Project  
Honolulu, Oahu, Hawaii  
TMK: (1) 3-9-013: 032

Thank you for the opportunity to comment on the subject project. We have no comments to offer at this time as the proposed project does not impact any of the Department of Accounting and General Services' projects or existing facilities.

If you have any questions, your staff may call Ms. Gayle Takasaki of the Planning Branch at 586-0584.

Sincerely,

A handwritten signature in black ink, appearing to read "CKinimaka", written over the printed name.

CHRISTINE L. KINIMAKA  
Public Works Administrator

GT:mo



January 17, 2022

State of Hawaii  
Department of Accounting and General Services  
P.O. Box 119  
Honolulu, Hawaii 96810

**Subject: Draft Environmental Assessment (EA)**  
**4 Lumahai Street**  
**Honolulu, HI 96825**  
**Tax Map Key 3-9-013: 032**

---

Dear Ms. Christine L. Kinimaka:

Thank you for your comment letter, dated October 21, 2021, in response to the above project. We acknowledge there are no comments or objections to the proposed project as it does not impact any of the Department of Accounting and General Services' projects or existing facilities.

Sincerely,

A handwritten signature in black ink, appearing to read "Vincent Yanagita", with a long, sweeping horizontal stroke extending to the right.

Vincent Yanagita  
Principal Scientist

**DEPARTMENT OF DESIGN AND CONSTRUCTION  
CITY AND COUNTY OF HONOLULU**

650 SOUTH KING STREET, 11<sup>TH</sup> FLOOR  
HONOLULU, HAWAII 96813  
Phone: (808) 768-8480 • Fax: (808) 768-4567  
Web site: [www.honolulu.gov](http://www.honolulu.gov)

RICK BLANGIARDI  
MAYOR



ALEX KOZLOV, P.E.  
DIRECTOR

HAKU MILLES, P.E.  
DEPUTY DIRECTOR

October 28, 2021

Ms. Rachel Okoji, M.S.  
President  
Environmental Risk Analysis LLC  
905 A Makahiki Way  
Honolulu, Hawaii 96826

Attn: 4 Lumahai

Dear Ms. Okoji,

Subject: Environmental Assessment for 4 Lumahai Street  
Honolulu, HI 96825  
TMK: (1) 3-9-013:32

Thank you for the opportunity to review and comment. The Department of Design and Construction has no comments to offer at this time.

Should you have any further questions, please contact me at 768-8480.

Sincerely,

A handwritten signature in black ink, appearing to read "Alex Kozlov", is written over a horizontal line.

*AK* Alex Kozlov, P.E.  
Director

AK:krm (865277)





January 17, 2022

City and County of Honolulu  
Department of Design and Construction  
630 South King Street, 11<sup>th</sup> Floor  
Honolulu, Hawaii 96810

**Subject:       Draft Environmental Assessment (EA)**  
**4 Lumahai Street**  
**Honolulu, HI 96825**  
**Tax Map Key 3-9-013: 032**

---

Dear Mr. Kozlov:

Thank you for your comment letter, dated October 28, 2021, in response to the above project. We acknowledge there are no comments or objections to the proposed project.

Sincerely,

A handwritten signature in black ink, appearing to read "Vincent Yanagita", with a long, sweeping horizontal stroke extending to the right.

Vincent Yanagita  
Principal Scientist

DEPARTMENT OF FACILITY MAINTENANCE  
**CITY AND COUNTY OF HONOLULU**

1000 Ulu'ohia Street, Suite 215, Kaloa, Hawaii 96707  
Phone: (808) 768-3343 • Fax: (808) 768-3381  
Website: www.honolulu.gov

RICK BLANGIARDI  
MAYOR



ROGER BABCOCK, JR., Ph. D., P.E.  
DIRECTOR AND CHIEF ENGINEER

DAWN B. SZEWCZYK, P.E.  
DEPUTY DIRECTOR

IN REPLY REFER TO  
DRM 21-630

October 25, 2021

Environmental Risk Analysis, LLC  
Ms. Rachel Okoji  
905A Makahiki Way  
Honolulu, Hawaii 96826

Dear Ms. Okoji:

Subject: Environmental Assessment for 4 Lumahai Street  
TMK: (1) 3-9-013:32


Thank you for the opportunity to review and comment on the subject project.

Our comments are as follow:

- During construction and upon completion of the project, any damages/deficiencies along the roadways, sidewalks, and storm drain catch basins on Lumahai Street shall be repaired to, and at no cost to the City and County of Honolulu. Please note that the homeowner will need to apply for an easement encroachment variance to build over the drain easement. The beach access should remain untouched.
- Once the construction phase commence, install approved Best Management Practices (BMP) fronting all drainage facilities on Lumahai Street.

If you have any questions, please call Mr. Kyle Oyasato of the Division of Road Maintenance at 768-3697.

Sincerely,

  
w/ Roger Babcock, Jr., Ph. D., P.E.  
Director and Chief Engineer

Attachment

Dropouts for each item:



Lokahi Console

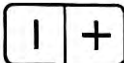
Cori Sonognini



Thursday, October 21st, 2021, 12:52 PM

Select a view to add... ▾

Map View



4 Lumahai St, Honolulu, HI, 96825, USA X 🔍



1:564 21.26 -157.705

Lokahi (One Call) X

Zoom ▾ Clear ▾

PERMIT NO

TICKETTYPE

MAPURL

ORIGCALLTIME

TRAN





January, 17, 2022

City and County of Honolulu  
Department of Facility Maintenance  
1000 Ulu'ohia Street, Suite 215  
Kapolei, Hawaii 96707

**Subject: Draft Environmental Assessment (EA)**  
**4 Lumahai Street**  
**Honolulu, HI 96825**  
**Tax Map Key 3-9-013: 032**

---

Dear Mr. Babcock:

Thank you for your comment letter, dated October 25, 2021, in response to the above project.

In response to your comments:

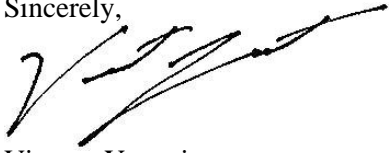
1. During construction and upon completion of the project, any damages/deficiencies along the roadways, sidewalks, and storm drain catch basins on Lumahai Street shall be repaired to, and at no cost to the City and County of Honolulu. Please note that the homeowner will need to apply for an easement encroachment variance to build over the drain easement. The beach access should remain untouched.

*Section 5.2.6 of the Draft Environmental Assessment was revised to reflect that during construction and upon completion of the project, the beach access will remain unimpacted. The construction activities will be staged to not hinder access to the public recreation areas, including ingress and egress effects of vehicle traffic, generated from the proposed construction activities. Upon completion of the project, any damages/deficiencies along the roadways, sidewalks, and storm drain catch basins on Lumahai Street shall be repaired. Section 4.1.3 was revised to note that due to the presence of a drainage easement running through the center of the property, a drainage easement encroachment variance will be requested and part of the approval process for a proposed structure to be installed within/over the City Drain Easement area.*

2. Once construction phase commence, install approved Best Management Practices (BMP) fronting all drainage facilities on Lumahai Street.

*Section 5.2.8 was revised to include that once the construction phase commence, approved BMPs should be installed fronting all drainage facilities on Lumahai Street.*

Sincerely,

A handwritten signature in black ink, appearing to read 'Vincent Yanagita', written in a cursive style with a long horizontal flourish extending to the right.

Vincent Yanagita  
Principal Scientist

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DAVID V. IGE  
GOVERNOR  
STATE OF HAWAII

JOSH GREEN  
LT. GOVERNOR  
STATE OF HAWAII



WILLIAM J. AILĀ, JR.  
CHAIRMAN  
HAWAIIAN HOMES COMMISSION

TYLER L. GOMES  
DEPUTY TO THE CHAIRMAN

**STATE OF HAWAII  
DEPARTMENT OF HAWAIIAN HOME LANDS**

P O BOX 1879  
HONOLULU, HAWAII 96805

October 28, 2021

Ref.: PO-21-324

Rachael Okoji, President  
Environmental Risk Analysis LLC  
905A Makahiki Way  
Honolulu, Hawai'i 96826  
[vincentyanagita@envioriskhawaii.com](mailto:vincentyanagita@envioriskhawaii.com)  
Attn: 4 Lumahai

Aloha Rachel:

Subject: Environmental Assessment (EA) Request  
Demolition of Existing Single-family Residence  
4 Lumahai Street, Honolulu, HI 96825  
TMK: (1) 3-9-013:032

The Department of Hawaiian Home Lands acknowledges receiving the request for comments on the above-cited project. After reviewing the materials submitted, due to its lack of proximity to Hawaiian Home Lands, we do not anticipate any impacts to our lands or beneficiaries from the project.

However, we highly encourage all agencies to consult with Hawaiian Homestead community associations and other (N)ative Hawaiian organizations when preparing environmental assessments in order to better assess potential impacts to cultural and natural resources, access and other rights of Native Hawaiians.

Mahalo for the opportunity to provide comments. If you have any questions, please call Andrew H. Choy, Acting Planning Program Manager at (808)620-9481, or contact via email at [andrew.h.choy@hawaii.gov](mailto:andrew.h.choy@hawaii.gov).

Me ke aloha,

A handwritten signature in black ink, appearing to read "William J. Ailā, Jr.", is written over a horizontal line.

William J. Ailā, Jr., Chairman  
Hawaiian Homes Commission





January 17, 2022

State of Hawaii  
Department of Hawaiian Home Lands  
PO Box 1879  
Honolulu, Hawaii 96805

**Subject: Draft Environmental Assessment (EA)**  
**4 Lumahai Street**  
**Honolulu, HI 96825**  
**Tax Map Key 3-9-013: 032**

---

Dear Chairman Aila Jr:

Thank you for your comment letter, dated October 28, 2021, in response to the above project. We acknowledge that based on the proximity to Hawaiian Home Lands, you do not anticipate any impacts to the lands and beneficiaries from the proposed project.

We also acknowledge your recommendation for additional consultation. We have reached out to other agencies including the Office of Hawaiian Affairs, State Historic Preservation Division, and the Livable Hawaii Kai Hui to further assess and identify any cultural or natural resources that would be affected.

Sincerely,

A handwritten signature in black ink, appearing to read "Vincent Yanagita", with a long, sweeping horizontal stroke extending to the right.

Vincent Yanagita  
Principal Scientist

DAVID Y. IGE  
GOVERNOR OF HAWAII



SUZANNE D. CASE  
CHAIRPERSON  
BOARD OF LAND AND NATURAL RESOURCES  
COMMISSION ON WATER RESOURCE  
MANAGEMENT

**STATE OF HAWAII  
DEPARTMENT OF LAND AND NATURAL RESOURCES  
LAND DIVISION**

POST OFFICE BOX 621  
HONOLULU, HAWAII 96809

November 08, 2021

LD 1192e

Rachel Okoji, President  
Environmental Risk Analysis LLC  
905A Makahiki Way  
Honolulu, HI 96826

*Via email: [vincentyanagita@enviroriskhawaii.com](mailto:vincentyanagita@enviroriskhawaii.com)*

Dear Ms. Okoji:

**SUBJECT: Draft Environmental Assessment  
Wheatley Single Family Residence  
4 Lumahai Street, Honolulu, Island of Oahu, Hawaii  
TMK: (1) 3-9-013:032**

Thank you for the opportunity to review and comment on the subject project. The Land Division of the Department of Land and Natural Resources (DLNR) distributed copies of your request to various DLNR divisions, as indicated on the attached, for their review and comment.

Attached is are comments received from our (a) Engineering Division and (b) Division of Forestry and Wildlife. Should you have any questions, please feel free to contact Barbara Lee via email at [barbara.j.lee@hawaii.gov](mailto:barbara.j.lee@hawaii.gov). Thank you.

Sincerely,

*Russell Tsuji*

Russell Y. Tsuji  
Land Administrator

Attachments

Cc: Central Files



STATE OF HAWAII  
DEPARTMENT OF LAND AND NATURAL RESOURCES  
LAND DIVISION

POST OFFICE BOX 621  
HONOLULU, HAWAII 96809

October 19, 2021

LD1192e

**MEMORANDUM**

FROM:

~~TO:~~

**DLNR Agencies:**

X Div. of Aquatic Resources (via email: kendall.l.tucker@hawaii.gov)

X Div. of Boating & Ocean Recreation (via email: richard.t.howard@hawaii.gov)

X **Engineering Division** (via email: DLNR.Engr@hawaii.gov)

X Div. of Forestry & Wildlife (via email: rubyrosa.t.terrago@hawaii.gov)

   Div. of State Parks

X Commission on Water Resource Management (via email: DLNR.CWRM@hawaii.gov)

X Office of Conservation & Coastal Lands (via email: sharleen.k.kuba@hawaii.gov)

X Land Division – Oahu District (via email: barry.w.cheung@hawaii.gov)

TO:

~~FROM:~~

Russell Y. Tsuji, Land Administrator

*Russell Tsuji*

SUBJECT:

**Draft Environmental Assessment (DEA) for Wheatley Single Family Residence**

LOCATION:

**4 Lumahai Street, Honolulu, Island of Oahu, Hawaii**

**TMK: (1) 3-9-013:032**

APPLICANT:

Environmental Risk Analysis LLC on behalf of Mr. Robert M. Wheatley & Ms. Sue J. Lee

Transmitted for your review and comment is information on the above-referenced subject. The [DEA](#) was published on October 08, 2021 by the State Environmental Review Program (formerly the Office of Environmental Quality Control) at the Office of Planning and Sustainable Development in the periodic bulletin, The Environmental Notice, available at the following link:

[http://oeqc2.doh.hawaii.gov/The\\_Environmental\\_Notice/2021-10-08-TEN.pdf](http://oeqc2.doh.hawaii.gov/The_Environmental_Notice/2021-10-08-TEN.pdf)

Please submit any comments by **November 05, 2021** to [barbara.j.lee@hawaii.gov](mailto:barbara.j.lee@hawaii.gov) at Land Division. If no response is received by this date, we will assume your agency has no comments. If you have any questions, please contact Barbara Lee directly via email at the above email address. Thank you.

**BRIEF COMMENTS:**

- ( ) We have no objections.
- ( ) We have no comments.
- ( ) We have no additional comments.
- (✓) Comments are included/attached.

Signed:

*Carty S. Chang*

Print Name:

Carty S. Chang, Chief Engineer

Division:

Engineering Division

Date:

Oct 29, 2021

Attachments

Cc: Central Files

**DEPARTMENT OF LAND AND NATURAL RESOURCES  
ENGINEERING DIVISION**

**LD/Russell Y. Tsuji**

**Ref: Draft Environmental Assessment (DEA) for Wheatley Single Family  
Residence**

**Location: 4 Lumahai Street, Honolulu, Island of Oahu, Hawaii**

**TMK(s): (1) 3-9-013:032**

**Applicant: Environmental Risk Analysis LLC on behalf of Mr. Robert M.  
Wheatley & Ms. Sue J. Lee**

**COMMENTS**

The rules and regulations of the National Flood Insurance Program (NFIP), Title 44 of the Code of Federal Regulations (44CFR), are in effect when development falls within a Special Flood Hazard Area (high-risk areas). Be advised that 44CFR, Chapter 1, Subchapter B, Part 60 reflects the minimum standards as set forth by the NFIP. Local community flood ordinances may stipulate higher standards that can be more restrictive and would take precedence over the minimum NFIP standards.

The owner of the project property and/or their representative is responsible to research the Flood Hazard Zone designation for the project. Flood zones subject to NFIP requirements are identified on FEMA's Flood Insurance Rate Maps (FIRM). The official FIRMs can be accessed through FEMA's Map Service Center ([msc.fema.gov](http://msc.fema.gov)). Our Flood Hazard Assessment Tool (FHAT) (<http://gis.hawaiiinfip.org/FHAT>) could also be used to research flood hazard information.

If there are questions regarding the local flood ordinances, please contact the applicable County NFIP coordinating agency below:

- Oahu: City and County of Honolulu, Department of Planning and Permitting (808) 768-8098.
- Hawaii Island: County of Hawaii, Department of Public Works (808) 961-8327.
- Maui/Molokai/Lanai County of Maui, Department of Planning (808) 270-7139.
- Kauai: County of Kauai, Department of Public Works (808) 241-4849.

Signed:   
CARTY S. CHANG, CHIEF ENGINEER

Date: Oct 29, 2021



STATE OF HAWAII  
DEPARTMENT OF LAND AND NATURAL RESOURCES  
LAND DIVISION

POST OFFICE BOX 621  
HONOLULU, HAWAII 96809

October 19, 2021

LD1192e

**MEMORANDUM**

TO: **DLNR Agencies:**  
X Div. of Aquatic Resources (via email: [kendall.l.tucker@hawaii.gov](mailto:kendall.l.tucker@hawaii.gov))  
X Div. of Boating & Ocean Recreation (via email: [richard.t.howard@hawaii.gov](mailto:richard.t.howard@hawaii.gov))  
X Engineering Division (via email: [DLNR.Engr@hawaii.gov](mailto:DLNR.Engr@hawaii.gov))  
X Div. of Forestry & Wildlife (via email: [rubyrosa.t.terrago@hawaii.gov](mailto:rubyrosa.t.terrago@hawaii.gov))  
\_\_\_ Div. of State Parks  
X Commission on Water Resource Management (via email: [DLNR.CWRM@hawaii.gov](mailto:DLNR.CWRM@hawaii.gov))  
X Office of Conservation & Coastal Lands (via email: [sharleen.k.kuba@hawaii.gov](mailto:sharleen.k.kuba@hawaii.gov))  
X Land Division – Oahu District (via email: [barry.w.cheung@hawaii.gov](mailto:barry.w.cheung@hawaii.gov))  
**Russell Tsuji**

FROM: Russell Y. Tsuji, Land Administrator

SUBJECT: **Draft Environmental Assessment (DEA) for Wheatley Single Family Residence**

LOCATION: **4 Lumahai Street, Honolulu, Island of Oahu, Hawaii**

APPLICANT: **TMK: (1) 3-9-013:032**  
Environmental Risk Analysis LLC on behalf of Mr. Robert M. Wheatley & Ms. Sue J. Lee


Transmitted for your review and comment is information on the above-referenced subject. The [DEA](#) was published on October 08, 2021 by the State Environmental Review Program (formerly the Office of Environmental Quality Control) at the Office of Planning and Sustainable Development in the periodic bulletin, The Environmental Notice, available at the following link:

[http://oeqc2.doh.hawaii.gov/The\\_Environmental\\_Notice/2021-10-08-TEN.pdf](http://oeqc2.doh.hawaii.gov/The_Environmental_Notice/2021-10-08-TEN.pdf)

Please submit any comments by **November 05, 2021** to [barbara.j.lee@hawaii.gov](mailto:barbara.j.lee@hawaii.gov) at Land Division. If no response is received by this date, we will assume your agency has no comments. If you have any questions, please contact Barbara Lee directly via email at the above email address. Thank you.

**BRIEF COMMENTS:**

- ( ) We have no objections.  
( ) We have no comments.  
( ) We have no additional comments.  
☒ Comments are included/attached.

Signed:   
Print Name: DAVID G. SMITH, Administrator  
Division: Division of Forestry and Wildlife  
Date: Nov 5, 2021

Attachments  
Cc: Central Files



**STATE OF HAWAII**  
DEPARTMENT OF LAND AND NATURAL RESOURCES  
DIVISION OF FORESTRY AND WILDLIFE  
1151 PUNCHBOWL STREET, ROOM 325  
HONOLULU, HAWAII 96813

November 5, 2021

**MEMORANDUM**

*Log no. 3390*

**TO:** RUSSELL Y. TSUJI, Administrator  
Land Division

**FROM:** DAVID G. SMITH, Administrator  
Division of Forestry and Wildlife

**SUBJECT: Division of Forestry and Wildlife Comments for the Draft Environmental Assessment (DEA) for Wheatley Single Family Residence**

The Department of Land and Natural Resources, Division of Forestry and Wildlife (DOFAW) has received your inquiry regarding the DEA for the Wheatly single-family residence demolition and construction project at 4 Lumahai Street, Honolulu, Island of O'ahu, TMK: (1) 3-9-013:32. The proposed project consists of demolishing an existing single-family residence; and construction of a new model two-story, single family residence with a new pool, shared exterior lanais, minor landscape upgrades, two additional parking spaces, and renovation of two existing car garages.

We appreciate the inclusion of mitigation measures in the Draft EA intended to avoid construction and operational impacts to State listed species such as the Hawaiian Hoary Bat or 'Ōpe'ape'a (*Lasiurus cinereus semotus*), and four state listed endangered Hawaiian seabirds. Also, we appreciate the measures outlined in the permit application to minimize night time lighting impacts to seabirds. DOFAW provides the following additional comments on the potential of the proposed work to affect listed species in the vicinity of the project area.

The State endangered White Tern (*Gygis alba*) or Manu o Kū is known to nest in the proposed project vicinity. If tree trimming or removal is planned, DOFAW strongly recommends surveying for the presence of White Terns prior to any action that could disturb the trees. White Tern pairs lay their single egg in a branch fork with no nest. The eggs and chicks can be easily dislodged by construction equipment that nudges the trees. If a nest is discovered, please notify DOFAW staff for assistance.

DOFAW recommends minimizing the movement of plant or soil material between worksites, such as in fill. Soil and plant material may contain invasive fungal pathogens (e.g. Rapid 'Ōhi'a Death), vertebrate and invertebrate pests (e.g. Little Fire Ants, Coconut Rhinoceros Beetles), or invasive plant parts that could harm our native species and ecosystems. We recommend consulting the O'ahu Invasive Species Committee (OISC) at (808) 266-7994 in planning, design, and construction of the project to learn of any high-risk invasive species in the area and ways to mitigate spread. All equipment, materials, and personnel should be cleaned of excess soil and debris to minimize the risk of spreading invasive species. Gear that may contain soil, such as work

boots and vehicles, should be thoroughly cleaned with water and sprayed with 70% alcohol solution to prevent the spread of Rapid 'Ōhi'a Death and other harmful fungal pathogens.

DOFAW recommends using native plant species for landscaping that are appropriate for the area (i.e. climate conditions are suitable for the plants to thrive, historically occurred there, etc.). Please do not plant invasive species. DOFAW recommends consulting the Hawai'i-Pacific Weed Risk Assessment website to determine the potential invasiveness of plants proposed for use in the project (<https://sites.google.com/site/weedriskassessment/home>). We recommend that you refer to [www.plantpono.org](http://www.plantpono.org) for guidance on selection and evaluation for landscaping plants.

We appreciate your efforts to work with our office for the conservation of our native species. Should the scope of the project change significantly, or should it become apparent that threatened or endangered species may be impacted, please contact our staff as soon as possible. If you have any questions, please contact Paul Radley, Protected Species Habitat Conservation Planning Coordinator at (808) 295-1123 or [paul.m.radley@hawaii.gov](mailto:paul.m.radley@hawaii.gov).

Sincerely,

A handwritten signature in black ink, appearing to read 'D. G. Smith'.

DAVID G. SMITH  
Administrator



RECEIVED

2021 OCT 19 AM 8:54

DEPT. OF LAND  
& NATURAL RESOURCES  
STATE OF HAWAII

October 8, 2021

State of Hawaii  
Department of Land and Natural Resources  
P.O. Box 621  
Honolulu, HI 96809

RECEIVED  
LAND DIVISION

2021 OCT 19 AM 9:17

DEPT. OF LAND &  
NATURAL RESOURCES  
STATE OF HAWAII

**Subject: Environmental Assessment for 4 Lumahai Street, Honolulu, HI 96825**  
**TMK: (1) 3-9-013:32**

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Dear Sir or Madam,

Environmental Risk Analysis LLC is conducting an Environmental Assessment to evaluate potential environmental impacts associated with the demolition of an existing single-family residence and construction of new single family residence at 4 Lumahai Street, Honolulu, HI 96825. The property is designated as Tax Map Key (TMK) (1) 3-9-013:32 in Honolulu, Hawaii on the island of Oahu and is currently zoned for residential use.

Demolition includes the existing single-family residence, site walls, stairs, foundation, and associated utilities. The construction includes renovation of existing two (2) car garage and reuse of existing structure and foundation system. Two additional surface parking spaces will be included in front of the garage. Construction includes a new modular, two (2) story, single-family residence comprised of a main kitchen, living and dining room, four bedrooms and baths, laundry, and mechanical room. The project also includes a new pool, shared exterior lanais and minor landscape upgrades. As the proposed project is replacement of an existing residential structure, and has a low potential for adverse environmental impacts, ERA anticipates a Finding of No Significant Impact.

A copy of the DRAFT Environmental Assessment can be accessed at the link below:

[http://oeqc2.doh.hawaii.gov/Other\\_TEN\\_Publications/2021-10-08-OA-Chapter-25-DEA-Wheatley-Single-Family-Residence.pdf](http://oeqc2.doh.hawaii.gov/Other_TEN_Publications/2021-10-08-OA-Chapter-25-DEA-Wheatley-Single-Family-Residence.pdf)

Please forward any comments, questions, or concerns within 30 calendar days. Comments can be submitted via email to [vincentyanagita@enviroriskhawaii.com](mailto:vincentyanagita@enviroriskhawaii.com) or by post to Environmental Risk Analysis LLC, 905A Makahiki Way, Honolulu, Hawaii 96826, Attn: 4 Lumahai.

Sincerely,

A handwritten signature in black ink, appearing to read "Rachel Okoji".  
Rachel Okoji  
President





January 18, 2022

State of Hawaii  
Department of Land and Natural Resources  
Division of Forestry and Wildlife  
1151 Punchbowl Street, Room 325  
Honolulu, Hawaii 96813

**Subject: Draft Environmental Assessment (EA)**  
**4 Lumahai Street**  
**Honolulu, HI 96825**  
**Tax Map Key 3-9-013: 032**

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Dear Mr. Smith:

Thank you for your comment letter, dated November 5, 2021, in response to the above project.

1. The State endangered White Tern (*Gygis alba*) or Manu o Kū is known to nest in the proposed project vicinity. If tree trimming or removal is planned, DOFAW strongly recommends surveying for the presence of White Terns prior to any action that could disturb the trees. White Tern pairs lay their single egg in a branch fork with no nest. The eggs and chicks can be easily dislodged by construction equipment that nudges the trees. If a nest is discovered, please notify DOFAW staff for assistance.

*Information regarding the White Tern was added to the Final Environmental Assessment in Section 5.1.4.*

2. DOFAW recommends minimizing the movement of plant or soil material between worksites, such as in fill. Soil and plant material may contain invasive fungal pathogens (e.g. Rapid 'Ōhi'a Death), vertebrate and invertebrate pests (e.g. Little Fire Ants, Coconut Rhinoceros Beetles), or invasive plant parts that could harm our native species and ecosystems. We recommend consulting the O'ahu Invasive Species Committee (OISC) at (808) 266-7994 in planning, design, and construction of the project to learn of any high-risk invasive species in the area and ways to mitigate spread. All equipment, materials, and personnel should be cleaned of excess soil and debris to minimize the risk of spreading invasive species. Gear that may contain soil, such as work boots and vehicles, should be thoroughly cleaned with water and sprayed with 70% alcohol solution to prevent the spread of Rapid 'Ōhi'a Death and other harmful fungal pathogens.

*Information regarding recommended mitigation measures for soil and plant materials was added to the Final Environmental Assessment in Section 5.1.4.*

3. DOFAW recommends using native plant species for landscaping that are appropriate for the area (i.e. climate conditions are suitable for the plants to thrive, historically occurred there, etc.). Please do not plant invasive species. DOFAW recommends consulting the Hawai'i-Pacific Weed Risk Assessment website to determine the potential invasiveness of plants proposed for use in the project (<https://sites.google.com/site/weedriskassessment/home>). We recommend that you refer to [www.plantpono.org](http://www.plantpono.org) for guidance on selection and evaluation for landscaping plants.

*Information regarding the recommendation for use of native plant species was added to the Final Environmental Assessment in Section 5.1.4.*

Sincerely,

A handwritten signature in black ink, appearing to read 'Vincent Yanagita', with a long, sweeping horizontal stroke extending to the right.

Vincent Yanagita  
Principal Scientist



January 18, 2022

State of Hawaii  
Department of Land and Natural Resources  
Engineering Division  
PO Box 621  
Honolulu, Hawaii 96809

**Subject: Draft Environmental Assessment (EA)**  
**4 Lumahai Street**  
**Honolulu, HI 96825**  
**Tax Map Key 3-9-013: 032**

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Dear Mr. Chang:

Thank you for your comment letter, dated October 29, 2021, in response to the above project.

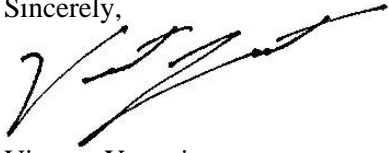
1. The rules and regulations of the National Flood Insurance Program (NFIP), Title 44 of the Code of Federal Regulations (44CFR), are in effect when development falls within a Special Flood Hazard Area (high-risk areas). Be advised that 44CFR, Chapter 1, Subchapter B, Part 60 reflects the minimum standards as set forth by the NFIP. Local community flood ordinances may stipulate higher standards that can be more restrictive and would take precedence over the minimum NFIP standards.

The owner of the project property and/or their representative is responsible to research the Flood Hazard Zone designation for the project. Flood zones subject to NFIP requirements are identified on FEMA's Flood Insurance Rate Maps (FIRM). The official FIRMs can be accessed through FEMA's Map Service Center ([msc.fema.gov](http://msc.fema.gov)). Our Flood Hazard Assessment Tool (FHAT) (<http://gis.hawaiiinfip.org/FHAT>) could also be used to research flood hazard information.

*Added to Section 6.1.2 that the rules and regulations of the National Flood Insurance Program (NFIP), Title 44 of the Code of Federal Regulations (44 CFR), are in effect when development falls within a Special Flood Hazard Area (high-risk areas). 44 CFR, Chapter 1, Subchapter B, Part 60 reflects the minimum standards as set forth by the NFIP.*

*The site is located in Flood Insurance Rate Map Zone D / VE. A portion of the property is considered a coastal high hazard area as defined in Chapter 21A, Revised Ordinances of Honolulu (ROH) (Flood Zone VE and V). The proposed development has been designed with the flood zones considered.*

Sincerely,

A handwritten signature in black ink, appearing to read 'Vincent Yanagita', written in a cursive style.

Vincent Yanagita  
Principal Scientist



January 18, 2022

State of Hawaii  
Department of Land and Natural Resources  
Land Division – Hawaii District  
PO Box 621  
Honolulu, Hawaii 96809

**Subject: Draft Environmental Assessment (EA)**  
**4 Lumahai Street**  
**Honolulu, HI 96825**  
**Tax Map Key 3-9-013: 032**

---

Dear Mr. Tsuji:

Thank you for your comment letter, dated November 8, 2021, in response to the above project.

We acknowledge that there are no comments at this time. Comments received from Engineering Division and the Division of Forestry and Wildlife, have been addressed and separate letters will be sent to those departments.

Sincerely,

A handwritten signature in black ink, appearing to read "Vincent Yanagita", with a long, sweeping horizontal stroke extending to the right.

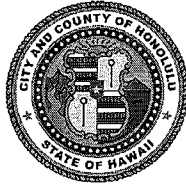
Vincent Yanagita  
Principal Scientist

DEPARTMENT OF PLANNING AND PERMITTING  
**CITY AND COUNTY OF HONOLULU**

650 SOUTH KING STREET, 7<sup>TH</sup> FLOOR • HONOLULU, HAWAII 96813  
PHONE: (808) 768-8000 • FAX: (808) 768-6041  
DEPT. WEB SITE: [www.honoluluodpp.org](http://www.honoluluodpp.org) • CITY WEB SITE: [www.honolulu.gov](http://www.honolulu.gov)

FILE

RICK BLANGIARDI  
MAYOR



DEAN UCHIDA  
DIRECTOR

DAWN TAKEUCHI APUNA  
DEPUTY DIRECTOR

EUGENE H. TAKAHASHI  
DEPUTY DIRECTOR

November 8, 2021

2021/ED-14(ST)

Mr. Russell Okoji  
Environmental Risk Analysis LLC  
905A Makahiki Way  
Honolulu, Hawaii 96826

Dear Mr. Okoji:

SUBJECT: Draft Environmental Assessment (EA)  
Chapter 25, Revised Ordinances of Honolulu (ROH)  
Wheatley Residence (Project)  
4 Lumahai Street - Maunaloa  
Tax Map Key 3-9-013: 032

The following are our comments on the Draft EA for the above Project:

1. Section 1.1 – Scope and Authority: This section should be revised to indicate that the EA is prepared pursuant to the Special Management Area (SMA) Ordinance, Chapter 25, ROH which requires that an EA be prepared for an SMA Use Permit in accordance to the procedural steps set forth in State Environmental Impact Statement (EIS) law, Chapter 343, Hawaii Revised Statutes (HRS).
2. Section 2 – Project Description: This section should be expanded to thoroughly describe the proposed dwelling, its key features including overall floor area, maximum height, materials to be utilized, its configuration and foundation in relation to the challenging topography of the site and the existing drainage easement which the proposed dwelling will straddle.

A subsection should also be added to the Final EA which provides a brief background on the existing dwelling to be demolished, its size, type of construction, and a brief description of the original subdivision development in the early 1970s, of which it is a part.

3. Section 4.1 Physical Environment

- a. 4.1.1. Topography and Geology: Please review and verify the existing elevations of the Project site. Our records and your attached plans indicate that the property extends from about 140 feet to less than 30 feet above mean sea level.
- b. 4.1.3. Natural Hazards: The section of the Final EA should disclose and discuss the City stormwater drainage easement (Easement 6) which is located through the center of the site and directly under the proposed dwelling. The Final EA should explain what obligations and approvals are relevant in constructing over an established drainage easement, as well as discuss possible hazards posed due to increasing storm related flooding associated with climate change.

4. Section 5 Environmental Consequences and Proposed Mitigation Measures

- a. 5.1.2 – Soils: This section should provide an estimate of the amount of earthwork anticipated to construct the new dwelling. Also, no actual mitigation measures related to temporary construction runoff nor long-term techniques are discussed. The Final EA should include a brief description of measures that will be undertaken to prevent soils and construction debris from entering the shoreline below. In the long-term, the Final EA should describe erosion control measures to be utilized to prevent soil from the site from entering the publicly utilized shoreline and nearshore waters below.
- b. 5.1.3 Natural Hazards: This section should describe the proximity of the proposed dwelling, at its lowest level, in relation to the established flood elevation. The geotechnical investigation report prepared for the Project and its recommendations should be discussed in the Final EA and the document attached should be attached in the Appendix.

Sea Level Rise (SLR): This section of the Final EA should expanded to also include, discuss and disclose the anticipated impacts of a 3.2 foot SLR in addition to the 0.5 foot in SLR.

- c. Mayor's Directive 18-02: The Mayor's Directive issued on July 16, 2018, requires all City Departments and Agencies to conserve and enhance a natural, dynamic shoreline wherever possible. It also directs Departments to recognize climate change mitigation and adaptation as an urgent matter, use the SLR Guidance and Hawaii SLR Vulnerability and Adaptation Report in planning decisions. The proposed replacement dwelling should be discussed in the context of its objectives.

Section 6.1.4 Shoreline Setback Ordinance, Chapter 23: We note that a certified shoreline survey is not necessarily required for the proposed Project. Pursuant to the Department of Planning and Permitting Part 2 Rules Relating to the Shoreline Setback and the SMA (aka Shoreline Rules), a waiver from the Certified Shoreline Survey requirement is possible for construction which is inland from the presumed shoreline setback line pursuant to Section 13-5(a)(7).

Section 6.1.2 City and County Zoning

Land Use Ordinance: This section should be expanded to disclose that the proposed dwelling will exceed the 30-foot building envelope which is formed by the second plane of 30 foot which follows the contour of the declining slope. The Final EA should explain why other configurations of the modular dwelling which did not exceed this building envelope were considered, but not proposed as the preferred options for this replacement dwelling Project.

Section 6.1.3 Coastal Zone Management (CZM), Chapter 205A: The discussion of CZM policies in this section should be expanded to address each of the policies articulated in Section 205A-2(c), HRS.

Act 16 (2020) State Legislature of Hawaii - On September 15, 2020, the CZM law was amended to eliminate the single-family dwelling exemption in the SMA for all shoreline parcels, regardless of whether dwelling floor area is less than 7,500 square feet. Consequently, since this new dwelling is considered "development" and has a valuation in excess of \$500,000, a Major SMA Use Permit needs to be obtained from the City Council.

Section 6.1.5 East Honolulu Sustainable Communities Plan (EHSCP): The discussion of the EHSCP in the Final EA should be revised to reflect that the updated SCP as approved via Ordinance 21-11 (Bill 88 (2020) CD2, which took effect on April 21, 2021.

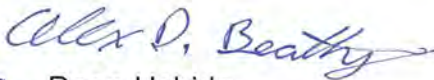
Section 7 Findings and Reasons Supporting Agency Determination: This section should cite that this discussion of the Significance Criteria set forth in determining whether an EIS is required pursuant to the EIS rules, Title 11-200:1-13.



Mr. Russel Okoji  
November 8, 2021  
Page 4

We are also forwarding copies of the comments we received so far which may not have already been sent directly or copied to you. Should you have any questions, please contact Steve Tagawa, of our staff, at (808) 768-8024.

Very truly yours,

  
for Dean Uchida  
Director

Attachments: Comment Letters

cc: Department of Land and Natural Resources-Office of Conservation and Coastal  
Land - Samuel J. Lemmo  
Environmental Review Program - Mary Alice Evans  
Office of Planning and Sustainable Development - Shichao Li



January 17, 2022

City and County of Honolulu  
Department of Planning and Permitting  
P.O. Box 2359  
Honolulu, HI 96804

**Subject: Draft Environmental Assessment (EA)  
Chapter 25, Revised Ordinances of Honolulu (ROH)  
Wheatley Residence (Project)  
4 Lumahai Street - Maunalua  
Tax Map Key 3-9-013: 032**

---

Dear Mr. Uchida:

Thank you for your comment letter, dated November 8, 2021, in response to the above project.

In response to your comments:

1. Section 1.1 - Scope and Authority: This section should be revised to indicate that the EA is prepared pursuant to the Special Management Area (SMA) Ordinance, Chapter 25, ROH which requires that an EA be prepared for an SMA Use Permit in accordance to the procedural steps set forth in State Environmental Impact Statement (EIS) law, Chapter 343, Hawaii Revised Statutes (HRS).

*In the Final Environmental Assessment (EA), added to the Executive Summary and Section 1.1 that the EA was prepared pursuant to the Special Management Area (SMA) Ordinance, Chapter 25, ROH.*

2. Section 2 - Project Description: This section should be expanded to thoroughly describe the proposed dwelling, its key features including overall floor area, maximum height, materials to be utilized, its configuration and foundation in relation to the challenging topography of the site and the existing drainage easement which the proposed dwelling will straddle.

A subsection should also be added to the Final EA which provides a brief background on the existing dwelling to be demolished, its size, type of construction, and a brief description of the original subdivision development in the early 1970s, of which it is a part.

*Added additional details regarding the proposed dwelling to Section 2.*

3. Section 4.1 Physical Environment
  - a. 4.1.1. Topography and Geology: Please review and verify the existing elevations of the Project site. Our records and your attached plans indicate that the property extends from about 140 feet to less than 30 feet above mean sea level.

*Revised Section 4.1.1 with the corrected elevations from approximately 30 feet to 140 feet above mean sea level.*

- b. 4.1.3. Natural Hazards: The section of the Final EA should disclose and discuss the City stormwater drainage easement (Easement 6) which is located through the center of the site and directly under the proposed dwelling. The Final EA should explain what obligations and approvals are relevant in constructing over an established drainage easement, as well as discuss possible hazards posed due to increasing storm related flooding associated with climate change.

*Discussion of the drainage easement was added to Section 4.1.3. Discussion of impacts are discussed in Section 5.1.3. Hazards are anticipated to be similar to that of the existing structure.*

4. Section 5 Environmental Consequences and Proposed Mitigation Measures

- a. 5.1.2 - Soils: This section should provide an estimate of the amount of earthwork anticipated to construct the new dwelling. Also, no actual mitigation measures related to temporary construction runoff nor long-term techniques are discussed. The Final EA should include a brief description of measures that will be undertaken to prevent soils and construction debris from entering the shoreline below. In the long-term, the Final EA should describe erosion control measures to be utilized to prevent soil from the site from entering the publicly utilized shoreline and nearshore waters below.

*Added to Section 5.1.2 that best management practices (BMPs) with erosion and sediment control measures, including silt fences, berms and other erosion control devices, shall be prepared and implemented to confine the proposed excavation and construction activities, and prevent potential soil, construction debris and polluted runoff from adversely impacting the coastal ecosystem, and the shoreline below.*

- b. 5.1.3 Natural Hazards: This section should describe the proximity of the proposed dwelling, at its lowest level, in relation to the established flood elevation. The geotechnical investigation report prepared for the Project and its recommendations should be discussed in the Final EA and the document attached should be attached in the Appendix.

Sea Level Rise (SLR): This section of the Final EA should expanded to also include, discuss and disclose the anticipated impacts of a 3.2 foot SLR in addition to the 0.5 foot in SLR.

*The Geotechnical Investigation Report was added as Appendix B. Added discussion of the flood elevation of 44 feet above mean sea level and minimum elevation of the structure of 113 feet above mean sea level to Section 5.1.3..*

*Added the 3.2 foot SLR figure to Exhibit 3 and included in the applicable discussion sections. The 3.2 foot sea level rise has minimal impact to the site due to the cliffs located on the southern portion of the property.*

- c. Mayor's Directive 18-02: The Mayor's Directive issued on July 16, 2018, requires all City Departments and Agencies to conserve and enhance a natural, dynamic shoreline wherever possible. It also directs Departments to recognize climate change mitigation and adaptation as an urgent matter, use the SLR Guidance and Hawaii SLR Vulnerability and Adaptation Report in' planning decisions. The proposed replacement dwelling should be discussed in the context of its objectives.

*Section 5.1.1 was revised to include discussion of the natural shoreline. Section 5.1.3 discusses potential impacts due to the SLR. No impacts are anticipated based on the comparison with the 0.5 foot and 3.2 foot SLR.*

5. Section 6.1.4 Shoreline Setback Ordinance, Chapter 23: We note that a certified shoreline survey is not necessarily required for the proposed Project. Pursuant to the Department of Planning and Permitting Part 2 Rules Relating to the Shoreline Setback and the SMA (aka Shoreline Rules), a waiver from the Certified Shoreline Survey requirement is possible for construction which is inland from the presumed shoreline setback line pursuant to Section 13-5(a)(7).

*A certified shoreline survey was completed in 2019 and has been included as a call out on Drawing A1.01. Figure 4 was revised to note that the nearest portion of the proposed dwelling is located over 108 feet from the 2019 certified shoreline.*

6. Section 6.1.2 City and County Zoning: Land Use Ordinance: This section should be expanded to disclose that the proposed dwelling will exceed the 30-foot building envelope which is formed by the second plane of 30 foot which follows the contour of the declining slope. The Final EA should explain why other configurations of the modular dwelling which did not exceed this building envelope were considered, but not proposed as the preferred options for this replacement dwelling Project.

*Section 2 was revised to include discussion of the maximum height restrictions and that the proposed dwelling meets maximum building height restrictions.*

7. Section 6.1.3 Coastal Zone Management (CZM), Chapter 205A: The discussion of CZM policies in this section should be expanded to address each of the policies articulated in Section 205A-2(c), HRS. Act 16 (2020) State Legislature of Hawaii - On September 15, 2020, the CZM law was amended to eliminate the single-family dwelling exemption in the SMA for all shoreline parcels, regardless of whether dwelling floor area is less than 7,500 square feet. Consequently, since this new dwelling is considered "development" and has a valuation in excess of \$500,000, a Major SMA Use Permit needs to be obtained from the City Council.

*Section 6.1.3 was revised to include the policies in Section 205A-2(c), HRS. Act 16 (2020). Also noted in Section 6.1.3 that the EA was prepared in support of the Major SMA Use Permit due to the revision of the CZM laws as noted in the comment.*

8. Section 6.1.5 East Honolulu Sustainable Communities Plan (EHSCP): The discussion of the EHSCP in the Final EA should be revised to reflect that the updated SCP as approved via Ordinance 21-11 (Bill 88 (2020) CO2, which took effect on April 21, 2021.

*Revised Section 6.1.5 with the corrected EHSCP reference and effective date. Revised the applicable objectives and policies of the EHSCP to include discussion on SLR and climate change impacts.*

9. Section 7 Findings and Reasons Supporting Agency Determination: This section should cite that this discussion of the Significance Criteria set forth in determining whether an EIS is required pursuant to the EIS rules, Title 11-200:1-13.

*Added correct citation to the Significance Criteria evaluated to Section 7.*

Sincerely,

A handwritten signature in black ink, appearing to read 'Vincent Yanagita', with a stylized flourish extending to the right.

Vincent Yanagita  
Principal Scientist

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DEPARTMENT OF PARKS & RECREATION  
**CITY AND COUNTY OF HONOLULU**

1000 Uluohia Street, Suite 309, Kapolei, Hawaii 96707  
Phone (808) 768-3003 • Fax (808) 768-3053  
Website www.honolulu.gov

RICK BLANGIARDI  
MAYOR



LAURA H. THIELEN  
DIRECTOR

KEHAULANI PU'U  
DEPUTY DIRECTOR

October 25, 2021

Mr. Russell Okoji  
Environmental Risk Analysis, LLC  
905-A Makahiki Way  
Honolulu, Hawaii 96826

Dear Mr. Okoji:

SUBJECT: Draft Environmental Assessment  
Wheatley Single Family Residence Replacement  
Tax Map Key 3-9-013:032  
2021/ED-14(ST)

In response to the Department of Planning and Permitting's (DPP) request, we respond directly to Environmental Risk Analysis, LLC with comments on the subject Draft Environmental Assessment prepared as a requirement for approval of a Special Management Area permit. The Department of Parks and Recreation has no comment.

As the proposed project will have no impact on any program or facility of the department, you may remove us as a consulted party to the balance of the Environmental Assessment process.

Should you have any further questions, please contact Mr. John Reid, Planner at 768-3017.

Sincerely,

A handwritten signature in black ink, appearing to read "Laura H. Thielen", is written over a light blue circular stamp.

Laura H. Thielen  
Director

LHT:jr  
(864989)

cc: Steve Tagawa, DPP - Land Use Approval Branch



January 17, 2022

City and County of Honolulu  
Department of Parks and Recreation  
1000 Oluohia Street, Suite 309  
Kapolei, HI 96707

**Subject: Draft Environmental Assessment (EA)**  
**4 Lumahai Street**  
**Honolulu, HI 96825**  
**Tax Map Key 3-9-013: 032**

---

Dear Ms. Thielen:

Thank you for your comment letter, dated October 25, 2021, in response to the above project. We acknowledge that the proposed project will have no impact to any Department of Parks and Recreation programs or facilities therefore there are no comments or objections to the proposed project.

Sincerely,

A handwritten signature in black ink, appearing to read "Vincent Yanagita", with a long, sweeping horizontal stroke extending to the right.

Vincent Yanagita  
Principal Scientist

HONOLULU FIRE DEPARTMENT  
**CITY AND COUNTY OF HONOLULU**

636 South Street  
Honolulu, Hawaii 96813-5007  
Phone: 808-723-7139 Fax: 808-723-7111 Internet: [www.honolulu.gov/hfd](http://www.honolulu.gov/hfd)

RICK BLANGIARDI  
MAYOR



LIONEL CAMARA JR.  
ACTING FIRE CHIEF  
  
SHELDON K. HAO  
ACTING DEPUTY FIRE CHIEF

October 25, 2021

Mr. Vincent Yanagita, B.S.  
Principal Scientist  
Environmental Risk Analysis LLC  
905A Makahiki Way  
Honolulu, Hawaii 96826

Dear Mr. Yanagita:

Subject: Environmental Assessment  
Wheatley Single-Family Residence Replacement  
4 Lumahai Street  
Honolulu, Hawaii 96825  
Tax Map Key: 3-9-012: 032

In response to a letter from Ms. Rachel Okoji of Environmental Risk Analysis LLC dated October 8, 2021, regarding the abovementioned subject, the Honolulu Fire Department (HFD) reviewed the submitted information and requires that the following be complied with:

1. Fire department access roads shall be provided such that any portion of the facility or any portion of an exterior wall of the first story of the building is located not more than 150 feet (46 meters) from fire department access roads as measured by an approved route around the exterior of the building or facility. (National Fire Protection Association [NFPA] 1; 2018 Edition, Sections 18.2.3.2.2 and 18.2.3.2.2.1, as amended.)  
  
A fire department access road shall extend to within 50 feet (15 meters) of at least one exterior door that can be opened from the outside and that provides access to the interior of the building. (NFPA 1; 2018 Edition, Section 18.2.3.2.1.)
2. An approved water supply capable of supply the required fire flow for fire protection shall be provided to all premises upon which facilities,



Mr. Vincent Yanagita, B.S.

Page 2

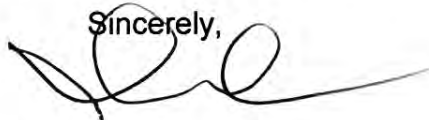
October 25, 2021

buildings, or portions of buildings are hereafter constructed or moved into the jurisdiction. The approved water supply shall be in accordance with Section 18.4. (NFPA 1; 2018 Edition, Section 18.3.1.)

3. The fire department access roads shall be in accordance with Section 18.2.3. (NFPA 1; 2018 Edition, Section 18.2.3.)
4. Submit civil drawings to the HFD for review and approval.

Should you have questions, please contact Battalion Chief Reid Yoshida of our Fire Prevention Bureau at 808-723-7151 or ryoshida@honolulu.gov.

Sincerely,

A handwritten signature in black ink, appearing to be 'J. Samala', with a long horizontal flourish extending to the right.

JASON SAMALA  
Assistant Chief

JS/RY:bh



January 17, 2022

City and County of Honolulu  
Honolulu Fire Department  
636 South Street  
Honolulu, HI 96813

**Subject: Draft Environmental Assessment (EA)  
Chapter 25, Revised Ordinances of Honolulu (ROH)  
Wheatley Residence (Project)  
4 Lumahai Street - Maunalua  
Tax Map Key 3-9-013: 032**

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Dear Mr. Samala:

Thank you for your comment letter, dated October 25, 2021, in response to the above project.

In response to your comments:

1. Fire department access roads shall be provided such that any portion of the facility or any portion of an exterior wall of the first story of the building is located not more than 150 feet (46 meters) from fire department access roads as measured by an approved route around the exterior of the building or facility. (National Fire Protection Association (NFPA) 1; 2018 Edition, Sections 18.2.3.2.2 and 18.2.3.2.2.1, as amended.)

A fire department access road shall extend to within 50 feet (15 meters) of at least one exterior door that can be opened from the outside and that provides access to the interior of the building. (NFPA 1; 2018 Edition, Section 18.2.3.2.1.)

*Drawing A1.01 was updated to show 150 foot measurement from access road/apparatus parking.*

2. An approved water supply capable of supply the required fire flow for fire protection shall be provided to all premises upon which facilities, buildings, or portions of buildings are hereafter constructed or moved into the jurisdiction. The approved water supply shall be in accordance with Section 18.4. (NFPA 1; 2018 Edition, Section 18.3.1.)

*Due to existing site constraints and access limitations, it is not possible for the fire department access road to extend within 50 feet of at least one exterior door. Per STUDY Architects correspondence with Battalion Chief Reid Yoshida of the Honolulu Fire Department on December 16, 2021 a letter requesting sprinklers in lieu of door access requirements has been sent to the Honolulu Fire Department.*

3. The fire department access roads shall be in accordance with Section 18.2.3. (NFPA 1; 2018 Edition, Section 18.2.3.)

*General Note has been added to sheet A1.01*

4. Submit civil drawings to the HFD for review and approval.

*Civil drawings have been provided to HFD.*

Sincerely,

A handwritten signature in black ink, appearing to read 'Vincent Yanagita', with a long, sweeping horizontal stroke extending to the right.

Vincent Yanagita  
Principal Scientist

POLICE DEPARTMENT  
CITY AND COUNTY OF HONOLULU

801 SOUTH BERETANIA STREET · HONOLULU, HAWAII 96813  
TELEPHONE (808) 529-3111 · INTERNET [www.honolulu.gov](http://www.honolulu.gov)



RICK BLANG ARDI  
MAYOR

RADE K. VANII  
INTERIM CHIEF

OUR REFERENCE **EO-DK**

October 22, 2021

**SENT VIA EMAIL**

Mr. Vincent Yanagita  
[vincentyanagita@envioriskhawaii.com](mailto:vincentyanagita@envioriskhawaii.com)

Dear Mr. Yanagita:

This is in response to your agency's letter of October 8, 2021, requesting input on the Draft Environmental Assessment for the proposed demolition and construction of a single-family home located at 4 Lumahai Street in Portlock.

The Honolulu Police Department has reviewed the information provided and does not have any comments or concerns at this time.

If there are any questions, please call Acting Major Brian Lynch of District 7 (East Honolulu) at 723-3369.

Thank you for the opportunity to review this project.

Sincerely,

A handwritten signature in black ink, appearing to read "Darren Chun", written over a horizontal line.

DARREN CHUN  
Assistant Chief of Police  
Support Services Bureau



January 17, 2022

City and County of Honolulu  
Police Department  
801 South Beretania Street  
Honolulu, Hawaii 96813

**Subject: Draft Environmental Assessment (EA)**  
**4 Lumahai Street**  
**Honolulu, HI 96825**  
**Tax Map Key 3-9-013: 032**

---

Dear Assistant Chief of Police Darren Chun:

Thank you for your comment letter, dated October 22, 2021, in response to the above project. We acknowledge there are no comments or objections to the proposed project.

Sincerely,

A handwritten signature in blue ink, appearing to read "Rachel Okoji", with a stylized flourish at the end.

Rachel Okoji, M.S.  
President



2021  
**BOARD OF  
DIRECTORS**

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Livable Hawaii Kai Hui  
Aloha Aina O Kamilo Nui  
Ka Iwi Coast

Livable Hawaii Kai Hui is a  
501(c)(3) non-profit,  
community organization  
serving East Honolulu  
since 2004. We strive to  
promote sensible growth,  
respect for cultural &  
natural resources and  
upholding the integrity of  
the East Honolulu  
Sustainable Communities  
Plan.

November 15, 2021

Environmental Risk Analysis, LLC  
905A Makahiki Way  
Honolulu, Hawai'i 96826  
Attn: 4 Lumahai  
Email: vincentyanagita@enviroriskhawaii.com

Aloha e Mr. Yanagita,

Thank you for contacting Livable Hawaii Kai Hui regarding your Environmental Assessment (EA) for the project at 4 Lumahai Street, Honolulu, Hawai'i 96825; Tax Map Key (TMK) (1) 3-9-013:032.

We appreciate your outreach to us regarding cultural resources and practices related to the area. As an 'āina-based organization in the Maunaloa region, we are indeed concerned with natural and cultural resource conservation in and around the project site.

Given that proposed construction is focused on previously disturbed property, we are not particularly concerned with adverse ecological impacts beyond those that ought to be mitigated during the construction process. We are also appreciative of the attention paid to structural resilience, shoreline protection, and flood inundation risks appropriate for such a Special Management Area (SMA), and are comforted by the anticipated Finding of No Significant Impact (FONSI). That said, we fully expect all environmental laws, regulations, best management and mitigation best-practices to be followed.

In regards to other Chapter 343 HRS Environmental Assessment factors discussed in the Draft Environmental Assessment (DEA), the Hui must express several concerns, particularly those related to Archaeological and Cultural Considerations, Social Factors and Community Identity, and Economic Considerations:

- 1) As noted by several of our Native Hawaiian cultural advisors, while the Hawai'i Cultural Resource Information System (HICRIS) and other searches utilized for the DEA may not highlight cultural resources on the 4 Lumahai Street property, there are important mo'olelo and significant historical sites tied to the immediately surrounding area of Kawaihoa,



Koko Head, and Hanauma. These cover everything from cultural and etiological mythology to documented use and development in both pre- and post-1778 Hawai'i. Accordingly, all construction and subsequent actions should be cognizant of their potential impacts and respectful of that history.

- 2) Public beach access and maintenance of public rights of way have been key issues in this area for a long time, but especially in recent years. This affects all residents, including Native Hawaiians whose Traditional and Customary Rights are protected per Article XII, Section 7 of the Hawai'i State Constitution. As such, the Hui stresses the need for developers, construction companies, permitting authorities, and all involved to maintain proper public access points around the project to the extent that health and safety allow.
- 3) As noted in the DEA, the socio-economic character of East Honolulu is reflected by a higher median household income than the broader Honolulu County. The particular project area of Portlock similarly stands out even among East Honolulu communities. That said, while the proposed project is unlikely to drastically change the character of the neighborhood, we must highlight for consideration the continued pattern of gentrification, its role in driving up the cost of living in the area, and subsequent effects on the community.

Once again, thank you for providing Livable Hawaii Kai Hui with the opportunity to comment on this matter. We appreciate your concern for the natural and cultural resources of Maunalua and look forward to seeing our comments reflected in your upcoming Environmental Assessment.

Mahalo nui loa,



Dianne Glei  
Secretary, Livable Hawaii Kai Hui

cc: Hawaii Kai Neighborhood Board #1, Chair Roberta Mayor





January 18, 2022

Livable Hawaii Kai Hui  
P.O. Box 25493  
Honolulu, Hawaii 96825

**Subject: Draft Environmental Assessment (EA)**  
**4 Lumahai Street**  
**Honolulu, HI 96825**  
**Tax Map Key 3-9-013: 032**

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Dear Ms. Glei:

Thank you for your comment letter, dated November 15, 2021, in response to the above project.

1. Given that proposed construction is focused on previously disturbed property, we are not particularly concerned with adverse ecological impacts beyond those that ought to be mitigated during the construction process. We are also appreciative of the attention paid to structural resilience, shoreline protection, and flood inundation risks appropriate for such a Special Management Area (SMA), and are comforted by the anticipated Finding of No Significant Impact (FONSI). That said, we fully expect all environmental laws, regulations, best management and mitigation best-practices to be followed.

*The construction is intended to full comply with all anticipated environmental laws, regulations, and best management practice requirements. We acknowledge that there is little concern with adverse ecological impacts due to the previously disturbed nature of the property.*

2. In regards to other Chapter 343 HRS Environmental Assessment factors discussed in the Draft Environmental Assessment (DEA), the Hui must express several concerns, particularly those related to Archaeological and Cultural Considerations, Social Factors and Community Identity, and Economic Considerations:

As noted by several of our Native Hawaiian cultural advisors, while the Hawai'i Cultural Resource Information System (HICRIS) and other searches utilized for the DEA may not highlight cultural resources on the 4 Lumahai Street property, there are important mo'olelo and significant historical sites tied to the immediately surrounding area of Kawaihoa, Koko Head, and Hanauma. These cover everything from cultural and etiological mythology to documented use and development in both pre and post-1778 Hawai'i. Accordingly, all construction and subsequent actions should be cognizant of their potential impacts and respectful of that history.

*Further consultation with Native Hawaii organizations will be performed prior to construction operations. Notably, the Office of Hawaiian Affairs recommended a formal consultation with the State Historic Preservation Division regarding both the property and the neighboring areas prior to construction operations. In addition, permitting requirements will necessitate conducting*



*public meetings at a future date which hopefully will ensure that any known cultural practices at the property or in the vicinity of the property are considered during construction and operation of the new residence.*

3. Public beach access and maintenance of public rights of way have been key issues in this area for a long time, but especially in recent years. This affects all residents, including Native Hawaiians whose Traditional and Customary Rights are protected per Article XII, Section 7 of the Hawai'i State Constitution. As such, the Hui stresses the need for developers, construction companies, permitting authorities, and all involved to maintain proper public access points around the project to the extent that health and safety allow.

*Beach and shoreline access has been brought up by several consulted parties, especially in relation to the "Spitting Caves" located in close proximity to the project. During construction and upon completion of the project, the beach access will remain unimpacted.*

4. As noted in the DEA, the socio-economic character of East Honolulu is reflected by a higher median household income than the broader Honolulu County. The particular project area of Portlock similarly stands out even among East Honolulu communities. That said, while the proposed project is unlikely to drastically change the character of the neighborhood, we must highlight for consideration the continued pattern of gentrification, its role in driving up the cost of living in the area, and subsequent effects on the community.

*We acknowledge the position that the project is unlikely to drastically change the character of the neighborhood, and we are in consideration of the continued pattern of gentrification.*

Sincerely,

A handwritten signature in black ink, appearing to read 'Vincent Yanagita', with a long, sweeping horizontal stroke extending to the right.

Vincent Yanagita  
Principal Scientist



Vincent Yanagita &lt;vincentyanagita@enviroriskhawaii.com&gt;

---

**OHA Comment Re: DEA for 4 Lumahai Street**

1 message

**Kamakana Ferreira** <kamakanaf@oha.org>

Mon, Nov 8, 2021 at 2:26 PM

To: "vincentyanagita@enviroriskhawaii.com" &lt;vincentyanagita@enviroriskhawaii.com&gt;

Cc: "Tagawa, Steve H." &lt;stagawa@honolulu.gov&gt;, Kai Markell &lt;kaim@oha.org&gt;

Aloha Vincent,

The Office of Hawaiian Affairs (OHA) is in receipt of your October 8, 2021 letter inviting us to comment on the draft environmental assessment (DEA) for the 4 Lumahai Street single family residence project in Honolulu, O'ahu, TMK (1)3-9-013:032. Environmental Risk Analysis, LLC, has prepared the DEA on behalf of the applicants, Robert M. Wheatley and Sue J. Lee, pursuant to Hawai'i Revised Statutes (HRS) Chapter 343. Work will include demolition of an existing single-family residence and construction of a new 4725 square foot single-family residence with a 569 square foot garage. As the project area is within the Special Management Area (SMA) and a major SMA permit is being sought, HRS 343 has been triggered.

OHA offers the following comments on archaeological and cultural resources.

**Archaeological Resources**

In review of the DEA, it does not appear archaeological work specific to the parcel has been carried out or that a submission was provided to the State Historic Preservation Division (SHPD) for HRS 6E-42 review. The DEA appears to rely mostly on negative findings within the Hawaii Cultural Resource Information System (HICRIS) site for the subject property. It is further unclear if the search was made by an individual with historic preservation related expertise. Despite the negative findings in the database, OHA still believes SHPD review is necessary pursuant to HRS 6E-42 for the current permitting action. SHPD's review could provide insight with findings from neighboring properties that could help to understand the likelihood of encountering historic properties on the subject parcel. OHA thus urges the applicant not to proceed with any ground disturbing work until SHPD review is complete. OHA requests to be provided with copies of any SHPD comments.

**Cultural Resources**

The discussion on the existing condition of cultural resources is lumped in with the archaeological portion of the DEA with no apparent dedicated analysis or outreach methodology to identify cultural practices and resources. While cultural practices can often occur on historic properties and historic properties can in fact be considered cultural resources, this is not always the case. To minimize confusion, other DEAs have addressed historic properties and cultural resources in separate sections. The difference is crucial as different methodologies are used to identify historic properties and cultural practices associated with cultural resources. The process for documenting cultural practices involves a greater degree of consultation and outreach, whereas an archaeological study or report may not always require consultation and often solely relies on material findings.

Guidelines for assessing cultural impacts are provided by the Office of Environmental Quality Control (OEQC) in the *Guide to Implementation and Practice of the Hawaii Environmental Policy Act*, Exhibit 1-1, 2012 Edition. The process should involve an attempt to consult with community folks and cultural practitioners to ascertain ethnographic information on cultural resources and practices that occur on the site or in the broader area. As the DEA fails to mention any type of

outreach specific to cultural related consultation, it is unclear if the project will effect cultural practices occurring nearby. We thus encourage the applicant to complete some level of cultural outreach for this particular project and to document their findings on possible impacts to cultural resources or practices. Notably, the DEA mentions that the property is adjacent to a 10-foot access corridor to "Spitting Caves" of Maunalua Bay, a location frequented by locals for recreation and possibly fishing. OHA recommends minimally reaching out to the Livable Hawaii Kai Hui and Malama Maunalua.

OHA would further like to remind the applicant that the lack of any formal methodology or explanation specifically targeted at traditional and customary practices could prevent the approving agency from assessing the identity and scope of valued cultural and natural resources in the area. Articles IX and XII of the State of Hawai'i Constitution requires that government agencies must "promote and preserve cultural beliefs, practices, and resources of Native Hawaiians and other ethnic groups." Article XII Section 7 of the State of Hawai'i Constitution states:

"the State reaffirms and shall protect all rights, customarily and traditionally exercised for subsistence, cultural and religious purposes and possessed by ahupua'a tenants who are descendants of native Hawaiians who inhabited the Hawaiian Islands prior to 1778..."

In *Ka Pa'akai O Ka 'Aina v. Land Use Commission*, 94 Haw. 31 (2000), hereinafter *Ka Pa'akai*, the Hawai'i Supreme Court, reiterated the importance of Section 7 and reaffirmed that the State and its agencies are obligated to reasonably protect the traditional and customary rights of Hawaiians. The Supreme Court ruling States that agencies are obligated to make the assessment of cultural practices, independent of a developer or applicant. Typically, information gathered during a CIA or cultural assessment study during HRS 343 can help to inform the approving agency during the *Ka Pa'akai* process. However, there is no apparent outreach methodology for how cultural impacts were assessed within the DEA.

The *Ka Pa'akai* court decision set forth that a proper analysis of cultural impacts shall include: 1) the identity and scope of valued cultural, historical, or natural resources in the subject area, including the extent to which traditional and customary native Hawaiian rights are exercised; 2) the extent to which those resources – including traditional and customary native Hawaiian rights – will be affected or impaired by the proposed action; and, 3) the feasible action, if any, to be taken by the (agency) to reasonably protect native Hawaiian rights if they are found to exist. Generally, the "subject area" is not restricted to the project area as areas adjacent to the project area could be indirectly or directly impacted by actions within the project area. OHA recommends that the applicant work with the approving agency to carefully evaluate the *Ka Pa'akai* requirements and the OEQC guidelines for assessing cultural impacts.

## Closing Remarks

Mahalo for the opportunity to comment. We look forward to a revised DEA that addresses our concerns regarding archaeological resources and cultural impacts. Please feel free to contact me should you have any questions.

Mahalo,

*Kamakana C. Ferreira, M.A.*

Lead Compliance Specialist

Office of Hawaiian Affairs

560 N. Nimitz Hwy

Honolulu, Hi. 96817

(808)594-0227





January 18, 2022

Office of Hawaiian Affairs  
560 N. Nimitz Hwy., Suite 200  
Honolulu, HI 96817

**Subject: Draft Environmental Assessment (EA)**  
**4 Lumahai Street**  
**Honolulu, HI 96825**  
**Tax Map Key 3-9-013: 032**

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Dear Mr. Ferreira:

Thank you for your comment e-mail, dated November 8, 2021, in response to the above project.

1. Archaeological Resources

In review of the DEA, it does not appear archaeological work specific to the parcel has been carried out or that a submission was provided to the State Historic Preservation Division (SHPD) for HRS 6E-42 review. The DEA appears to rely mostly on negative findings within the Hawaii Cultural Resource Information System (HICRIS) site for the subject property. It is further unclear if the search was made by an individual with historic preservation related expertise. Despite the negative findings in the database, OHA still believes SHPD review is necessary pursuant to HRS 6E-42 for the current permitting action. SHPD's review could provide insight with findings from neighboring properties that could help to understand the likelihood of encountering historic properties on the subject parcel. OHA thus urges the applicant not to proceed with any ground disturbing work until SHPD review is complete. OHA requests to be provided with copies of any SHPD comments.

*The State Historic Preservation Division (SHPD) was contacted during initial pre-consult period in preparation of the Draft Environmental Assessment as well as was provided notification of availability of the Draft Environmental Assessment for review. No response was received. A SHPD review will be requested prior to ground disturbing work*

2. Cultural Resources

The discussion on the existing condition of cultural resources is lumped in with the archaeological portion of the DEA with no apparent dedicated analysis or outreach methodology to identify cultural practices and resources. While cultural practices can often occur on historic properties and historic properties can in fact be considered cultural resources, this is not always the case. To minimize confusion, other DEAs have addressed historic properties and cultural resources in separate sections. The difference is crucial as different methodologies are used to identify historic properties and cultural

practices associated with cultural resources. The process for documenting cultural practices involves a greater degree of consultation and outreach, whereas an archaeological study or report may not always require consultation and often solely relies on material findings.

*The Final Environmental Assessment has separated these into two separate sections as recommended.*

3. Guidelines for assessing cultural impacts are provided by the Office of Environmental Quality Control (OEQC) in the Guide to Implementation and Practice of the Hawaii Environmental Policy Act, Exhibit 1-1, 2012 Edition. The process should involve an attempt to consult with community folks and cultural practitioners to ascertain ethnographic information on cultural resources and practices that occur on the site or in the broader area. As the DEA fails to mention any type of outreach specific to cultural related consultation, it is unclear if the project will effect cultural practices occurring nearby. We thus encourage the applicant to complete some level of cultural outreach for this particular project and to document their findings on possible impacts to cultural resources or practices. Notably, the DEA mentions that the property is adjacent to a 10-foot access corridor to "Spitting Caves" of Maunalua Bay, a location frequented by locals for recreation and possibly fishing. OHA recommends minimally reaching out to the Livable Hawaii Kai Hui and Malama Maunalua.

*The Livable Hawaii Kai Hui and Malama Maunalua were contacted to review the Draft Environmental Assessment. The Livable Hawaii Kai Hui provided comment that given that proposed construction is focused on previously disturbed property, they are not particularly concerned with adverse ecological impacts beyond those that ought to be mitigated during the construction process. The Livable Hawaii Kai Hui did note that there are important mo'olelo and significant historical sites tied to the immediately surrounding area of Kawaihoa, Koko Head, and Hanauma. Accordingly, all construction and subsequent actions should be cognizant of their potential impacts and respectful of that history. Mitigation measures during construction will ensure preservation of any nearby cultural resources, by preventing impacts to areas offsite including BMPs to protect the shoreline, limiting fugitive dust generation, and preservation of beach access. Additionally, the proposed structure lies within the approximate existing footprint of the existing structure and no significant changes to topography or visual impact to the shoreline is anticipated.*

4. OHA would further like to remind the applicant that the lack of any formal methodology or explanation specifically targeted at traditional and customary practices could prevent the approving agency from assessing the identity and scope of valued cultural and natural resources in the area. Articles IX and XII of the State of Hawai'i Constitution requires that government agencies must "promote and preserve cultural beliefs, practices, and resources of Native Hawaiians and other ethnic groups." Article XII Section 7 of the State of Hawai'i Constitution states:

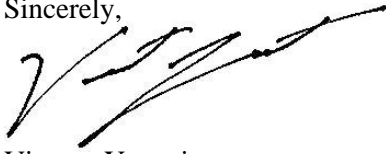
"the State reaffirms and shall protect all rights, customarily and traditionally exercised for subsistence, cultural and religious purposes and possessed by ahupua'a tenants who are descendants of native Hawaiians who inhabited the Hawaiian Islands prior to 1778 ... "

In *Ka Pa'akai O Ka 'Aina v. Land Use Commission*, 94 Haw. 31 (2000), hereinafter *Ka Pa'akai*, the Hawai'i Supreme Court, reiterated the importance of Section 7 and reaffirmed that the State and its agencies are obligated to reasonably protect the traditional and customary rights of Hawaiians. The Supreme Court ruling States that agencies are obligated to make the assessment of cultural practices, independent of a developer or applicant. Typically, information gathered during a CIA or cultural assessment study during HRS 343 can help to inform the approving agency during the *Ka Pa'akai* process. However, there is no apparent outreach methodology for how cultural impacts were assessed within the DEA.

The Ka Pa'akai court decision set forth that a proper analysis of cultural impacts shall include: 1) the identity and scope of valued cultural, historical, or natural resources in the subject area, including the extent to which traditional and customary native Hawaiian rights are exercised; 2) the extent to which those resources - including traditional and customary native Hawaiian rights - will be affected or impaired by the proposed action; and, 3) the feasible action, if any, to be taken by the (agency) to reasonably protect native Hawaiian rights if they are found to exist. Generally, the "subject area" is not restricted to the project area as areas adjacent to the project area could be indirectly or directly impacted by actions within the project area. OHA recommends that the applicant work with the approving agency to carefully evaluate the Ka Pa'akai requirements and the OEQC guidelines for assessing cultural impacts.

*It is currently projected that permitting requirements will necessitate holding public meetings where the applicant will be able to gather feedback from the public for any potential known cultural practices associated with the property and vicinity of the Site. Any additional recommended mitigation measures can be incorporated into the construction plan.*

Sincerely,

A handwritten signature in black ink, appearing to read 'Vincent Yanagita', with a long, sweeping horizontal stroke extending to the right.

Vincent Yanagita  
Principal Scientist



January 17, 2022

State of Hawaii  
Department of Transportation  
869 Punchbowl Street  
Honolulu, Hawaii 96813-5097

**Subject: Draft Environmental Assessment (EA)**  
**4 Lumahai Street**  
**Honolulu, HI 96825**  
**Tax Map Key 3-9-013: 032**

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Dear Director Butay:

Thank you for your comment letter, dated October 22, 2021, in response to the above project. We acknowledge your finding of the proposed project not significantly impacting State highway facilities, and thus no comments as this time.

Sincerely,

A handwritten signature in black ink, appearing to read "Vincent Yanagita", written over a series of horizontal lines.

Vincent Yanagita  
Principal Scientist





January 18, 2022

Office of Planning  
State of Hawaii  
235 South Beretania Street, 6<sup>th</sup> Floor  
Honolulu, Hawaii 96813

**Subject: Draft Environmental Assessment (EA)**  
**4 Lumahai Street**  
**Honolulu, HI 96825**  
**Tax Map Key 3-9-013: 032**

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Dear Director Evans:

Thank you for your comment letter, dated October 29, 2021, in response to the above project. Below is a summary of the responses to the comments received.

1. As the subject EA serves as a supporting document for the SMA Use Permit application, the OPSD suggests that the Final EA specifically discuss the compliance with the CZM objectives and policies set forth in HRS § 205A-2, as amended, and the requirements of SMA use under ROH Chapter 25, for the proposed residence project.

*The Final Environmental Assessment (EA) has been revised to reflect that it has been prepared for compliance with Special Management Area (SMA) Ordinance, Chapter 25, Revised Ordinances of Honolulu (ROH). Section 6.1.3 of the Final EA has also been revised to list the objectives and policies of the Coastal Zone Management Program.*

2. Sea level rise increases the risk of flooding, storm surges, waves, high tide, and coastal erosion. The Draft EA on page 4-2 states and Exhibit 3 shows that no portions of the project site are susceptible to rise of sea level of 0.5 feet. The OPSD suggests that Exhibit 3 utilize the 3.2-foot sea level rise exposure area (SLR-XA) which may occur in the mid to latter half of the 21st century, in relation to the property, and confirm whether the project site is outside the projected exposure by referring to the State of Hawaii Sea Level Riser Viewer. at <http://www.pacioos.hawaii.edu/shoreline/slr-hawaii/>.

*Exhibit 3 and relevant portions of the Final Environmental Assessment have been revised to include discussion of both the 0.5 foot and 3.2 foot sea level rise.*

3. The Draft EA on page 6-2 states that the proposed structure will not be building within the 40-foot shoreline setback. Please note that a shoreline setback line is determined by the county authority and may differ from what the DEA has provided. The OPSD suggests that the Final EA provide a site plan with the distance of the proposed residence structure from a certified shoreline to ensure that no structure or construction activities will be proposed within the shoreline area as defined in HRS § 205A-41.

*The associated construction drawings have been revised to display the certified shoreline with the proposed site plan. Figure 4 has been revised to show the minimum distance of the proposed structure to the certified shoreline of more than 108 feet.*

4. The Draft EA, page 4-2, states that the project site borders the Pacific Ocean and wetland areas classified by the U.S. Fish and Wildlife Service as M2USN Marine Wetlands. Earth-moving activities during construction will disturb onsite soils that could then run into the ocean or wetland areas if not contained. The OPSD recommends that site-specific best management practices with erosion and sediment control measures, including silt fences, berms and other erosion control devices, shall be prepared and implemented to confine the proposed excavation and construction activities, and prevent potential soil, construction debris and polluted runoff from adversely impacting the coastal ecosystem, and State waters as specified in Hawaii Administrative Rules Chapter 11-54.

*The Final Environmental Assessment Section 5.1.2 was revised to include that best management practices (BMPs) with erosion and sediment control measures, including silt fences, berms and other erosion control devices, shall be prepared and implemented to confine the proposed excavation and construction activities, and prevent potential soil, construction debris and polluted runoff from adversely impacting the coastal ecosystem, and the shoreline below. A site-specific Best Management Practices Plan will be prepared prior to ground disturbance activities.*

5. In enacting Act 224, SLH 2005, the legislature found that light pollution in Hawaii's coastal areas and artificial lighting illuminating the shoreline and ocean waters can be disruptive to avian and marine life. The OPSD concurs that the exterior lighting and lamp posts associated with the proposed residence project shall be cut-off luminaries to provide the necessary shielding to mitigate potential light pollution in the coastal areas, and lessen possible seabird strikes. No artificial light, except as provided in HRS §§ 205A-30.5(b) and 205A-71(b), shall be directed to travel across property boundaries toward the shoreline and ocean.

*Added the requirement that no artificial light, except as provided in HRS §§ 205A-30.5(b) and 205A-71(b), shall be directed to travel across property boundaries toward the shoreline and ocean to Section 5.1.4.*

6. The Draft EA states that the new 2-story structure will conform with the height and setback requirements as required by current code, in the East Honolulu Sustainable Communities Plan. The Final EA should provide and confirm the height of the proposed two-story single-family dwelling structure for the SMA use assessment.

*The Final Environmental Assessment has added the discussion of the maximum height restraint to Section 2.*

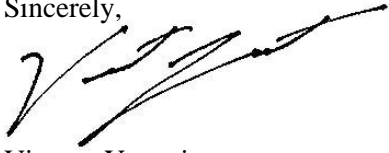
7. The site is adjacent to the 10-foot-wide public shoreline access to the "Spitting Caves" which is located immediately below the site. The lower 3,500-square-foot portion of the parcel is designated as a public access easement. The Final EA should discuss in detail the existing public access to and along the shoreline at the project site and ensure that the proposed project will not impact the public access to the ocean and recreation areas, including ingress and egress effects of vehicle traffic, generated from the proposed construction activities.

*Added discussion of the shoreline access to the "Spitting Caves" and requirement that this access be unimpacted during construction and upon completion of the project.*

8. Please note that Hawaii Administrative Rules (HAR) Chapter 11-200 has been repealed, and HAR Chapter 11-200.1 has been in effect since August 9, 2019.

*Revised as noted.*

Sincerely,

A handwritten signature in black ink, appearing to read 'Vincent Yanagita', written in a cursive style with a long horizontal flourish extending to the right.

Vincent Yanagita  
Principal Scientist



# United States Department of the Interior

FISH AND WILDLIFE SERVICE  
Pacific Islands Fish and Wildlife Office  
300 Ala Moana Boulevard, Room 3-122  
Honolulu, Hawai'i 96850



In Reply Refer To:  
01EPIF00-2022-TA-0028

October 27, 2021

Mr. Russell Okoji  
Environmental Risk Analysis, LLC.  
905-A Makahiki Way  
Honolulu, Hawai'i 96826

Subject: Technical Assistance Regarding the Draft Environmental Assessment for the  
Wheatley Residence on 4 Lumaha'i Street, O'ahu

Dear Mr. Okoji:

Thank you for your recent correspondence requesting technical assistance on species biology, habitat, or life requisite requirements. The Pacific Islands Fish and Wildlife Office (PIFWO) of the U.S. Fish and Wildlife Service (Service) appreciates your efforts to avoid or minimize effects to protected species associated with your proposed actions. We provide the following information for your consideration under the authorities of the Endangered Species Act (ESA) of 1973 (16 U.S.C. 1531 *et seq.*), as amended.

Due to significant workload constraints, PIFWO is currently unable to specifically address your information request. The table below lists the protected species most likely to be encountered by projects implemented within the Hawaiian Islands. Based on your project location and description, we have noted the species most likely to occur within the vicinity of the project area, in the '**Occurs In or Near Project Area**' column. Please note this list is not comprehensive and should only be used for general guidance. We have added to the PIFWO website, located at <https://www.fws.gov/pacificislands/promo.cfm?id=177175840> recommended conservation measures intended to avoid or minimize adverse effects to these federally protected species and best management practices to minimize and avoid sedimentation and erosion impacts to water quality. If your project occurs on the island of Hawai'i, we have also enclosed our biosecurity protocol for activities in or near natural areas.

If you are representing a federal action agency, please request an official species list following the instructions at our PIFWO website

## INTERIOR REGION 9 COLUMBIA-PACIFIC NORTHWEST

IDAHO, MONTANA\*, OREGON\*, WASHINGTON  
\*PARTIAL

## INTERIOR REGION 12 PACIFIC ISLANDS

AMERICAN SĀMOA, GUAM, HAWAII, NORTHERN  
MARIANA ISLANDS

<https://www.fws.gov/pacificislands/articles.cfm?id=149489558>. You can find out if your project occurs in or near designated critical habitat here: <https://ecos.fws.gov/ipac/>.

Under section 7 of the ESA, it is the Federal agency's (or their non-Federal designee) responsibility to make the determination of whether or not the proposed project "may affect" federally listed species or designated critical habitat. A "may affect, not likely to adversely affect" determination is appropriate when effects to federally listed species are expected to be discountable (i.e., unlikely to occur), insignificant (minimal in size), or completely beneficial. This conclusion requires written concurrence from the Service. If a "may affect, likely to adversely affect" determination is made, then the Federal agency must initiate formal consultation with the Service. Projects that are determined to have "no effect" on federally listed species and/or critical habitat do not require additional coordination or consultation.

Implementing the avoidance, minimization, or conservation measures for the species that may occur in your project area will normally enable you to make a "may affect, not likely to adversely affect" determination for your project. If it is determined that the proposed project may affect federally listed species, we recommend you contact our office early in the planning process so that we may assist you with the ESA compliance. If the proposed project is funded, authorized, or permitted by a Federal agency, then that agency should consult with us pursuant to section 7(a)(2) of the ESA. If no Federal agency is involved with the proposed project, the applicant should apply for an incidental take permit under section 10(a)(1)(B) of the ESA. A section 10 permit application must include a habitat conservation plan that identifies the effects of the action on listed species and their habitats and defines measures to minimize and mitigate those adverse effects.

We appreciate your efforts to conserve endangered species. We regret that we cannot provide you with more specific protected species information for your project site. If you have questions that are not answered by the information on our website, you can contact PIFWO at (808) 792-9400 and ask to speak to the lead biologist for the island where your project is located.

Sincerely,

Island Team Manager  
Pacific Islands Fish and Wildlife Office

Enclosures (2)

The table below lists the protected species most likely to be encountered by projects implemented within the Hawaiian Islands. For your guidance, we have marked species that may occur in the vicinity of your project, this list is not comprehensive and should only be used for general guidance.

#### Enclosure 1. Federal Status of Animal Species

<u>Scientific Name</u>	<u>Common Name / Hawaiian Name</u>	<u>Federal Status</u>	<u>May Occur In Project Area</u>
<b>Mammals</b>			
<i>Lasiurus cinereus semotus</i>	Hawaiian hoary bat/‘ōpe‘ape‘a	E	<input checked="" type="checkbox"/>
<b>Reptiles</b>			
<i>Chelonia mydas</i>	green sea turtle/honu - Central North Pacific distinct population segment (DPS)	T	<input type="checkbox"/>
<i>Eretmochelys imbricata</i>	hawksbill sea turtle/ honu ‘ea or ‘ea	E	<input type="checkbox"/>
<b>Birds</b>			
<i>Anas wyvilliana</i>	Hawaiian duck/koloa	E	<input type="checkbox"/>
<i>Branta sandvicensis</i>	Hawaiian goose/nēnē	T	<input type="checkbox"/>
<i>Fulica alai</i>	Hawaiian coot/‘alae ke‘oke‘o	E	<input type="checkbox"/>
<i>Gallinula galeata sandvicensis</i>	Hawaiian gallinule/‘alae ‘ula	E	<input type="checkbox"/>
<i>Himantopus mexicanus knudseni</i>	Hawaiian stilt/ae‘o	E	<input type="checkbox"/>
<i>Oceanodroma castro</i>	band-rumped storm-petrel Hawai‘i DPS/‘akē‘akē	E	<input checked="" type="checkbox"/>
<i>Pterodroma sandwichensis</i>	Hawaiian petrel/‘ua‘u	E	<input checked="" type="checkbox"/>
<i>Puffinus auricularis newelli</i>	Newell’s shearwater/‘a‘o	T	<input checked="" type="checkbox"/>
<i>Ardenna pacificus</i>	wedge-tailed shearwater/‘ua‘u kani	MBTA	<input checked="" type="checkbox"/>
<i>Buteo solitarius</i>	Hawaiian hawk/‘io	MBTA	<input type="checkbox"/>
<i>Gygis alba</i>	white tern/manu-o-kū	MBTA	<input type="checkbox"/>
<b>Insects</b>			
<i>Manduca blackburni</i>	Blackburn’s sphinx moth	E	<input type="checkbox"/>
<i>Megalagrion pacificum</i>	Pacific Hawaiian damselfly	E	<input type="checkbox"/>
<i>Megalagrion xanthomelas</i>	orangeblack Hawaiian damselfly	E	<input type="checkbox"/>
<i>Megalagrion nigrohamatum nigrolineatum</i>	blackline Hawaiian damselfly	E	<input type="checkbox"/>

**Enclosure 2. Federal Status of Plant Species**

<b>Plants</b>				
<b><u>Scientific Name</u></b>	<b><u>Common Name or Hawaiian Name</u></b>	<b><u>Federal Status</u></b>	<b><u>Locations</u></b>	<b><u>May Occur In Project Area</u></b>
<i>Abutilon menziesii</i>	ko'oloa'ula	E	O, L, M, H	<input type="checkbox"/>
<i>Achyranthes splendens</i> var. <i>rotundata</i>	'ewa hinahina	E	O	<input type="checkbox"/>
<i>Bonamia menziesii</i>	no common name	E	K, O, L, M, H	<input type="checkbox"/>
<i>Canavalia pubescens</i>	'āwikiwiki	E	Ni, K, L, M	<input type="checkbox"/>
<i>Colubrina oppositifolia</i>	kauila	E	O, M, H	<input type="checkbox"/>
<i>Cyperus trachysanthos</i>	pu'uka'a	E	K, O	<input type="checkbox"/>
<i>Gouania hillebrandii</i>	no common name	E	Mo, M	<input type="checkbox"/>
<i>Hibiscus brackenridgei</i>	ma'o hau hele	E	O, Mo, L, M, H	<input type="checkbox"/>
<i>Ischaemum byrone</i>	Hilo ischaemum	E	K, O, Mo, M, H	<input type="checkbox"/>
<i>Isodendrion pyrifolium</i>	wahine noho kula	E	O, H	<input type="checkbox"/>
<i>Marsilea villosa</i>	'ihi'ihhi	E	Ni, O, Mo	<input type="checkbox"/>
<i>Mezoneuron kavaense</i>	uhiuhi	E	O, H	<input type="checkbox"/>
<i>Nothocestrum breviflorum</i>	'aiea	E	H	<input type="checkbox"/>
<i>Panicum fauriei</i> var. <i>carteri</i>	Carter's panicgrass	E	Molokini Islet (O), Mo	<input type="checkbox"/>
<i>Panicum niuhauense</i>	lau'ehu	E	K	<input type="checkbox"/>
<i>Peucedanum sandwicense</i>	makou	E	K, O, Mo, M	<input type="checkbox"/>
<i>Pleomele (Chrysodracon)</i> <i>hawaiiensis</i>	halapepe	E	H	<input type="checkbox"/>
<i>Portulaca sclerocarpa</i>	'ihi	E	L, H	<input type="checkbox"/>
<i>Portulaca villosa</i>	'ihi	E	Le, Ka, Ni, O, Mo, M, L, H, Nihoa	<input type="checkbox"/>
<i>Pritchardia affinis</i> ( <i>maideniana</i> )	loulu	E	H	<input type="checkbox"/>
<i>Pseudognaphalium</i> <i>sandwicense</i> var. <i>molokaiense</i>	'ena'ena	E	Mo, M	<input type="checkbox"/>
<i>Scaevola coriacea</i>	dwarf naupaka	E	Mo, M	<input type="checkbox"/>
<i>Schenkia (Centaurium)</i> <i>sebaeoides</i>	'āwiwi	E	K, O, Mo, L, M	<input type="checkbox"/>
<i>Sesbania tomentosa</i>	'ōhai	E	Ni, Ka, K, O, Mo, M, L, H, Necker, Nihoa	<input type="checkbox"/>
<i>Tetramolopium rockii</i>	no common name	T	Mo	<input type="checkbox"/>
<i>Vigna o-wahuensis</i>	no common name	E	Mo, M, L, H, Ka	<input type="checkbox"/>

Location key: O=O'ahu, K=Kaua'i, M=Maui, H=island of Hawai'i, L=Lāna'i, Mo=Moloka'i, Ka=Kaho'olawe, Ni=Ni'ihau, Le=Lehua



January 18, 2022

US Department of the Interior  
Fish and Wildlife Service  
Pacific Islands Fish and Wildlife Office  
300 Ala Moana Boulevard  
Honolulu, Hawaii 96850

**Subject: Draft Environmental Assessment (EA)**  
**4 Lumahai Street**  
**Honolulu, HI 96825**  
**Tax Map Key 3-9-013: 032**

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Dear Mr. Nadig:

Thank you for your comment letter, dated October 27, 2021, in response to the above project. We have incorporated the list of protected species which may occur in the project area provided in the Environmental Assessment, as well as mitigative measures proposed by the US Fish and Wildlife Service.

Sincerely,

A handwritten signature in black ink, appearing to read "Vincent Yanagita", with a long, sweeping horizontal stroke extending to the right.

Vincent Yanagita  
Principal Scientist



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## **APPENDIX B**

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**REPORT  
GEOTECHNICAL INVESTIGATION**

**PROPOSED RESIDENCE AND SWIMMING POOL  
4 LUMAHAI STREET  
HONOLULU, OAHU, HAWAII  
TMK: (1) 3-9-013: 32**

for

**MR. BOB DRYSDALE**

Project No. 14-0123  
December 3, 2014

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**SHINSATO ENGINEERING, INC.**  
98-747 KUAHAO PLACE, #E  
PEARL CITY, HI 96782

# **SHINSATO ENGINEERING, INC.**

CONSULTING GEOTECHNICAL ENGINEERS

98-747 KUAHAO PLACE, SUITE E  
PEARL CITY, HAWAII 96782  
PHONE: (808) 487-7855  
FAX: (808) 487-7854

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December 3, 2014  
Project No. 14-0123

Mr. Bob Drysdale  
4 Lumahai Street  
Honolulu, Hawaii 96825

Dear Mr. Drysdale:

This report presents the results of a geotechnical investigation for your proposed new residence and swimming pool to be located at 4 Lumahai Street, Honolulu, Hawaii. TMK: (1) 3-9-013: 032

A summary of the findings is as follows:

- 1) The subsurface condition at the site was explored by drilling 1 test boring to the depths of 10.0 feet below grade and excavating 2 test pits to depths of 1.0 to 4.0 feet below existing grade. In general, the borings disclosed the site to be underlain by elastic SILT and silty GRAVEL layers followed by dense to very dense VOLCANIC TUFF at a depth ranging from 0.5 to 3.0 feet below grade. No groundwater was encountered in the borings at the time of the field investigation.
- 2) The underlying VOLCANIC TUFF is dense to very dense. Excavations into the TUFF may be difficult to accomplish and may require heavy equipment for removal. The removed material may be coarse and not suitable for use as structural fill.
- 3) Based on the findings and observations of this investigation, it is concluded that relatively shallow footings that bear on firm on-site soils, properly compacted fill or the underlying VOLCANIC TUFF may be used to support the proposed structures.

Details of the findings and recommendations are presented in the attached report.

This investigation was made in accordance with generally accepted engineering procedures and included such field and laboratory tests considered necessary for the project. In the opinion of the undersigned, the accompanying report has been substantiated by mathematical data in conformity with generally accepted engineering principles and presents fairly the design information requested by your organization. No other warranty is either expressed or given.

Respectfully submitted,

SHINSATO ENGINEERING, INC.



Lawrence S. Shinsato, P.E.  
President

LSS:ks



This work was prepared by me  
or under my supervision.  
License Expires 04/30/16

**Report  
Geotechnical Investigation  
Proposed Residence and Swimming Pool  
4 Lumahai Street  
Honolulu, Hawaii  
Tax Map Key Number (1) 3-9-013: 032**

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## 1.0 INTRODUCTION

This investigation was made for the purpose of obtaining information on the subsurface conditions from which to base recommendations for foundation design for the proposed residence and swimming pool to be located at 4 Lumahai Street in Honolulu, Hawaii. The location of the site, relative to the existing streets and landmarks, is shown on the Vicinity Map, Plate 1.

## 2.0 SCOPE OF WORK

The services included drilling 1 test boring to a depth of 10.0 feet below grade, excavating 2 test pits to depths of 1.0 and 4.0 feet below existing grade, obtaining samples of the underlying soils, performing laboratory tests to determine pertinent engineering properties of the representative soil samples, and performing an engineering analysis to determine foundation design parameters. The following information is provided for use by the Architect and/or Engineer:

1. General subsurface conditions, as disclosed by the test boring and test pits.
2. Physical characteristics of the soils encountered.
3. Recommendations for foundation design, including bearing values, embedment depth and estimated settlement.
4. Recommendations for placement of fill and backfill.
5. Special design considerations.

## 3.0 PLANNED DEVELOPMENT

From the information provided, the project will consist of constructing a new residence at the existing garage level and a swimming pool between the current garage and the existing residential structure.

## 4.0 SITE CONDITIONS

### 4.1 Surface

The property is located near the southerly end of Lumahai Street and is bound by existing residences to the north and south, by Lumahai Street to the east, and the ocean to the west. The ground slopes downward from the front to the rear of the lot. At the time of the field investigation, there were an existing residence and garage on the lot.

### 4.2 Subsurface

The subsurface condition at the site was explored by drilling 1 test boring to the depths of 10.0 feet below grade and excavating 2 test pits to the depths of 1.0 to 4.0 feet below existing grade. The locations of the borings are shown on the Plot Plan, Plate 2. Detailed logs of the boring and test pits are presented on Plates 3, 4, and 5.

In general, the explorations disclosed the site to be underlain by elastic SILT and silty GRAVEL layers followed by dense to very dense VOLCANIC TUFF at depths ranging from 0.5 to 3.0 feet below grade.

No groundwater was encountered in the explorations at the time of the field investigation.

From the USDA Soil Conservation Service "Soil Survey of the Islands of Kauai, Oahu, Maui, Molokai and Lanai, State of Hawaii," the site is located in an area designated as Koko silt loam, 6 to 12 percent slopes (KsC). This series consists of well-drained soils on fans and volcanic spurs on the island of Oahu. These soils developed in alluvium washed from deposits of volcanic ash, cinders, and tuff. On this soil, permeability is moderate. Runoff is medium, and the erosion hazard is moderate (USDA, 1972, pg. 72, Plate 68).

#### 4.3 Geology

The site is located on the southeastern end of the Koolau Mountain Range on the west-northwest flank of Koko Head crater. The formation of the Koolau Mountain Range above sea level is believed to have begun in late Tertiary/early Pleistocene time (between 1 and 12 million years ago) by eruptions of lava from a rift zone roughly paralleling the existing mountain crest trends. After cessation of the main volcanic activity, deep valleys such as Palolo and Manoa were carved into the mountain. During high stands of sea level, the valleys were infilled with sediments (alluviated) grading to the high sea level stands, windward side of the Koolau Mountain range.

Volcanic activity later resumed on the southeastern end of the Koolau Range. This consists of more than 30 separate cinder, spatter and ash cones. These late-stage eruptions are known as the Honolulu Volcanic Series and consist of well-known landmarks such as Diamond Head, Koko Head, Punchbowl and Tantalus.

The volcanic tuff of Koko Head consists largely of ash and lapilli that have been altered to palagonite. The formation of palagonite, a brown, waxy-or earthy substance, is part of the process of cementing the ash into tuff.

#### 5.0 CONCLUSIONS AND RECOMMENDATIONS

##### 5.1 General

Based on the findings and observations of this investigation, it is concluded that the proposed structures may be supported on relatively shallow footings that bear on firm on-site soils, properly compacted fill, and/or the underlying VOLCANIC TUFF.

##### 5.2 Special Consideration

Special considerations are anticipated for the design and construction of the project due to existing site conditions. These include but may not be limited to the following:

- a) The underlying VOLCANIC TUFF is dense to very dense. Excavations into the TUFF may be difficult to accomplish and may require heavy equipment for removal. The removed material may be coarse and not suitable for use as structural fill.

##### 5.3 Foundations

An allowable bearing value of 3,000 pounds per square foot may be used for footings that bear on the on-site SILT, silty GRAVEL and/or properly compacted fill. For footings bearing on the underlying VOLCANIC TUFF, an allowable bearing value of 6,000 psf may be used.

The bearing values are for dead plus live loads and may be increased by one-third for momentary loads due to wind or seismic forces. If any footing is eccentrically loaded, the maximum edge pressure shall not exceed

the bearing pressure for permanent or for momentary loads.

The minimum footing embedment depth shall be 12 inches below the lowest adjacent finished grade (measured to the bottom of the footing).

For footings located adjacent to utility trenches, the bottom of the footing shall be deepened below a 1 horizontal to 1 vertical plane projected upwards from the edge of the utility trench.

For footings located on or adjacent to slopes, the footing shall be deepened such that there is a minimum horizontal distance of 5 feet from the edge of the footing to the slope face.

Where footings are to be located adjacent to retaining walls or other structural elements which are not designed for surcharge loading, the new footing shall be deepened below a 45-degree plane projected upwards from the adjacent structure.

All loose and disturbed soil at the bottom of footing excavations shall be removed to firm soil or the disturbed soil shall be compacted prior to laying of steel or pouring of concrete.

#### 5.4 Seismic Design Parameters (2006 IBC)

In accordance with the 2006 International Building Code, the soil profile type may be assumed as C (very dense soil and soft rock). Seismic site parameters may be assumed as follows:

- a) Mapped spectral acceleration parameters:  
 $S_s$  (0.2 second spectral response acceleration) = 0.624 g  
 $S_1$  (1.0 second spectral response acceleration) = 0.184 g
- b) Site coefficients for site class C:  
 $F_a$  (short period) = 1.150  
 $F_v$  (1-second period) = 1.616
- c) Adjusted maximum considered earthquake spectral response acceleration parameters:  
 $S_{MS}$  (short periods) =  $F_a \times S_s = 0.718$  g  
 $S_{M1}$  (1-second periods) =  $F_v \times S_1 = 0.297$  g
- d) Design spectral response acceleration parameters:  
 $S_{DS}$  (short periods) =  $S_{MS} \times 2/3 = 0.479$  g  
 $S_{D1}$  (1-second periods) =  $S_{M1} \times 2/3 = 0.198$  g
- e) Seismic Design Category = C
- f) Peak Ground Acceleration =  $PGA = S_{DS} / 2.5 = 0.192$  g

#### 5.5 Settlement

Under the fully applied recommended bearing pressure, it is estimated that the total settlement of footings up to 5 feet square or 3 feet continuous footings that bear on firm on-site soils, properly compacted fill will be less than 1 inch. For footings bearing on the underlying VOLCANIC TUFF, settlement will be less than 1/2 inch.

Differential settlement between footings will vary according to the size and bearing pressure of the footing.

#### 5.6 Lateral Earth Pressures

The ultimate values for the lateral earth coefficients and frictional resistance may be assumed as follows:



Material Type	Passive Earth Coefficient (Kp)	Active Earth Coefficient (Ka)	At-Rest Earth Coefficient (Ko)	Frictional Coefficient (x D.L.)	Unit Weight (pcf)
on-site soil	3.0	0.30	0.45	0.5	110
Imported Structural Fill	3.5	0.27	0.42	0.7	140

NOTES:

1. The above values are ultimate values. An appropriate factor of safety should be applied in the design.
2. The passive, active and at-rest earth pressures are determined by multiplying the respective earth coefficient by the unit weight.
3. The allowable passive earth resistance values may be used for structural elements in direct contact with undisturbed material. Where the ground surface adjacent to the resisting element is exposed to the weather, the top 12 inches shall be neglected in calculating the passive earth resistance. This is to allow for soil shrinkage and/or erosion.
4. Lateral resistance and friction may be combined.
5. The above active earth coefficients do not include surcharge loads such as footings located within a 45-degree plane projected upwards from the heel of the footing, sloping ground and/or from hydrostatic pressures. If such conditions occur, the active earth pressures shall be increased accordingly.
6. The active earth pressure coefficient is for unrestrained conditions. Unrestrained walls are defined as walls that are allowed to rotate between 0.005 and 0.01 times the wall height. The rotation of the wall develops the "active earth pressure." If the wall is not allowed to move as in the case of basement walls or walls that are restrained at the top, the soil pressure that will develop is known as an "at-rest" pressure. For restrained walls, the above "at-rest" earth pressures shall be used to design the structure.
7. The active earth pressure coefficient for imported structural fill may be used to design retaining walls where the imported structural fill is placed within a 1H:2V plane projected upward and outward from the heel of the wall footing. Where this cannot be accomplished, the active earth pressure for the on-site soil shall be used to design the wall.
8. Drainage for the retaining wall backfill shall be accomplished by providing 4-inch diameter weepholes spaced 8-feet on-center or by using a minimum 4-inch diameter perforated PVC footing drain pipe. A 2-foot thick layer of crushed gravel (ASTM No. 67), which is wrapped with geotextile filter fabric, shall be placed above the pipe; the crushed gravel shall be continuous from weephole to weephole, or in the case of a footing drain pipe, laid throughout the full length of the pipe. Geotextile fabric shall be MIRAFI 140N or similar.
9. The backfill material for retaining walls shall be properly compacted in accordance with the Site Preparation and Grading section to this report. Also, surface drainage shall be designed to minimize surface water runoff from entering the backfill area. In non-pavement areas, the top 12 inches of backfill material shall be fine-grained, cohesive soil.

## 5.7 Slab-on-Grade

No expansive type soils were observed on the site or encountered in the explorations. Conventional slab-on-grade construction may be used. However, during construction should expansive CLAY soils be found under slab areas, the expansive CLAY shall be removed and if necessary to achieve finished subgrade elevation, shall be replaced with properly compacted structural fill.

It is recommended that concrete floor slabs that have moisture sensitive floor covering be constructed using a vapor retarder and a capillary moisture barrier of 4-inches of clean gravel cushion material such as #3-fine

gravel (ASTM Designation No. 67).

It is recommended that the subgrade soil be prepared in accordance with the Site Preparation and Grading section to this report.

#### 5.8 Slopes

Cut and fill slopes of soil type materials shall not exceed 2 horizontal to 1 vertical. Cut slopes into the underlying VOLCANIC TUFF may be made at 1 horizontal to 2 vertical.

Exposed slopes shall be covered as soon as practical after construction to minimize erosion.

Fill slopes shall be constructed by either overfilling and cutting back to compacted soil.

#### 5.9 Site Preparation and Grading

It is recommended that the site be prepared in the following manner:

- a. Clearing and Grubbing:  
In all areas to receive fill and in structural areas, all vegetation, weeds, brush, roots, stumps, rubbish, debris, soft soil and other deleterious material shall be removed and disposed of off-site.
- b. Preparation of Ground to Receive Fill:  
The exposed surface (except VOLCANIC TUFF subgrade) shall then be scarified to a depth of 6 inches, moisture conditioned to near optimum moisture (ASTM D1557-00) and then compacted to the degree of compaction specified below. If soft or loose spots are encountered, the loose/soft areas shall be removed to firm material and the resulting depression shall be filled with properly compacted fill.
- c. Types of Fill and Backfill Material:  
Structural fill and backfill shall be described as material placed beneath buildings and extending a horizontal distance of 3 feet beyond the edge of the building line. Non-structural fill shall be described as material placed beyond 3 feet from the building line.
- d. Material Quality:  
Fill and backfill material shall consist of soil which is free of organics and debris. The maximum size particle for fill and backfill material shall be as follows:

Structural Fill	
Top 2 feet below finished subgrade (FSG)	3"
Below 2 feet from FSG	6"
Non-structural fill and pavement areas	
Top 2 feet from FSG	3"
2 to 6 feet from FSG	6"
Below 6 feet from FSG	*

(FSG = Finished Subgrade Elevation)  
\*Generally minus 12-inch size material is preferred. However, larger rock or boulders (up to 24 inches in diameter) may be used in deep fills provided they are well embedded and geotextile filter fabric is placed over the "boulder" fill. If utility lines are to be installed within fill areas, the maximum particle size shall be reduced to minimize obstruction of trenching work.

Structural fill shall have a Unified Soil Classification of either GW, GM, GC, SW, SM, SP or SC. The plasticity index of the fine portion as determined by the ASTM D4318-84 test shall be less than 15.

e. Placement of Fill and Backfill:

Each layer of fill and backfill material shall be placed in lifts not exceeding the following (loose thickness):

Structural Fill

Top 2 feet below finished subgrade (FSG) 8"

Below 2 feet from FSG 12"

Non-structural fill

Top 6 feet from FSG 12"

Below 6 feet from FSG \*

\*The loose thickness of this layer shall not exceed 1.5 times the largest size particle; this is predicated upon proper compaction of each lift.

Prior to placing of fill and backfill material, the material shall be aerated or moistened to near optimum moisture content (ASTM D1557-00 test procedure).

Where fill is placed on existing ground that is steeper than 5 horizontal to 1 vertical, the existing ground surface shall be benched into firm soil as the fill is placed.

f. Degree of Compaction:

Each layer of fill and backfill shall be thoroughly compacted from edge to edge using conventional compaction equipment designed for the purpose. The minimum degree of compaction for each layer (as determined by the ASTM D1557-00 test procedure) shall be as follows:

i. Structural Fill (under and 3 feet beyond the edge of buildings): 95%

ii. Non-structural fill \*90%

\*Where compaction tests are not practical due to the size of the material, each layer shall be compacted by trackrolling until it does not weave or creep under the weight of the trackrolling equipment (D-8 dozer or larger).

It is particularly important to see that all fill and backfill soils are properly compacted in order for the design parameters to remain applicable.

g. Preparation of Footing Excavations:

Footing excavations shall be cleaned of loose material and soils disturbed by the excavation prior to placing of steel or pouring of concrete. Any soft soil encountered at the bottom of the footing excavation shall be removed to firm material. The resulting depression shall then be backfilled with properly compacted structural fill.

h. Site Drainage:

During construction, drainage shall be provided to minimize ponding of water adjacent to or on foundation and pavement areas. Ponded areas shall be drained immediately. Any subgrade soil that has become soft due to ponding shall be removed to firm material and replaced with compacted structural fill.

It is particularly important to see that all backfill soils are properly compacted especially if these are designed to resist lateral forces.

## 6.0 INSPECTION

During the progress of construction, so as to evaluate compliance with the design concepts, specifications and recommendations contained in this report, qualified engineering personnel should be present to observe the following operations:

1. Site preparation.
2. Placement of fill and backfill.
3. Footing excavations.

## 7.0 REMARKS

The conclusions and recommendations contained herein are based on the findings and observations made at the boring and test pit locations. If conditions are encountered during construction which appear to differ from those disclosed by the explorations, this office shall be notified so as to consider the need for modifications.

This report has been prepared for the exclusive use of Mr. Bob Drysdale and his respective design consultants. It shall not be used by or transferred to any other party or to another project without the consent and/or thorough review by this facility. Should the project be delayed beyond the period of one year from the date of this report, the report shall be reviewed relative to possible changed conditions.

Samples obtained in this investigation will deteriorate with time and will be unsuitable for further laboratory tests within one (1) month from the date of this report. Unless otherwise advised, the samples will be discarded at that time.

- o o o -

The following are included and complete this report:

### Appendix

- Field Investigation
- Laboratory Testing
- Vicinity Map
- Plot Plan
- Logs of Test Boring and Test Pits
- Results of Laboratory Tests

**APPENDIX**  
**FIELD INVESTIGATION AND LABORATORY TESTING**

## **FIELD INVESTIGATION**

### **General**

The field investigation consisted of drilling test borings and excavating test pits at the locations shown on the Plot Plan.

The boring was drilled using a gas-powered drilling rig. The hole was advanced using 4-inch diameter continuous flight augers. Soil cuttings were brought to the surface by the continuous flights. After the bore hole was advanced to the required depth and cleaned of cuttings by additional rotation of the augers, the augers were retracted for soil sampling or in-situ testing.

The test pits performed using various hand equipment.

### **Soil Sampling**

Relatively undisturbed samples of the underlying soils were obtained from the boring by driving a sampling tube into the subsurface material using a 140-pound safety hammer falling from a height of 30 inches. Ring samples were obtained using a 3-inch outside diameter, 2.5 inch inside diameter steel sampling tube with an interior lining of one-inch long, thin brass rings. The tube is driven approximately 18 inches into the soil and a section of the central portion is placed in a close fitting waterproof container in order to retain field conditions until completion of the laboratory tests. The number of blows required to drive the sampler into the ground is recorded at 6-inch intervals. The blow count for the last 12-inches is shown on the boring logs.

The soil samples are visually classified in the field using the Unified Soil Classification System. Samples are packed in moisture proof containers and transported to the laboratory for testing.

## **LABORATORY TESTING**

### **General**

Laboratory tests are performed on various soil samples to determine their engineering properties. Descriptions of the various tests are listed below.

### **Unit Weight and Moisture Content**

The in-place moisture content and unit weight of the samples are used to correlate similar soils at various depths. The sample is weighed, the volume determined, and a portion of the sample is placed in the oven. After oven-drying, the sample is again weighed to determine the moisture loss. The data is used to determine the wet-density, dry-density and in-place moisture content.

### **Classification Tests**

The terms and symbols used to describe the soil materials are based on the Unified Soil Classification System which provides a basis for classifying soils using either visual methods or laboratory test results. Laboratory tests include sieve and hydrometer analysis for particle size distribution, and Atterberg Limits test for liquid limit, and plasticity index determination.

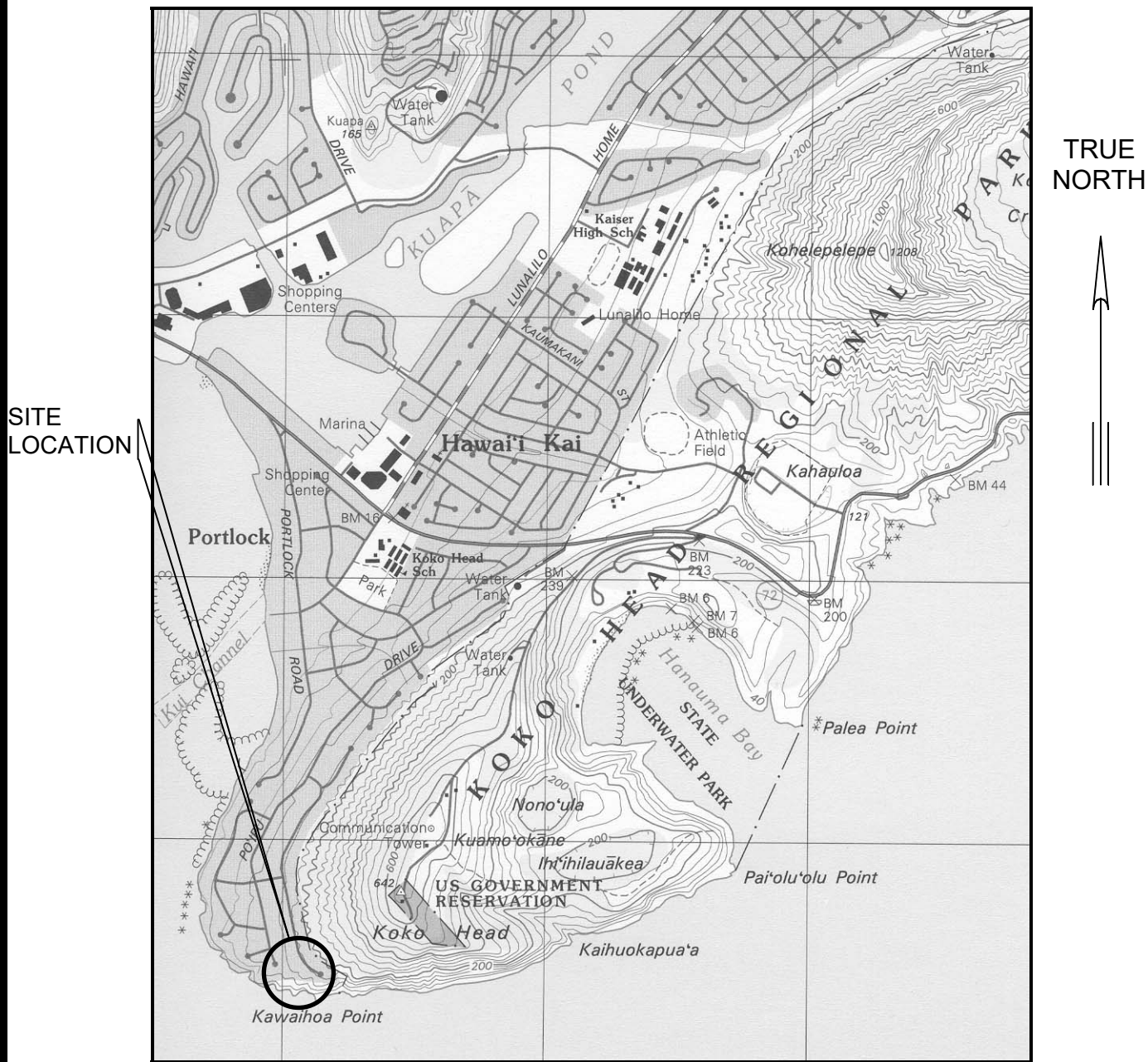
Grain-size distribution of the soil is determined by passing the soil through a series of sieves. If 50 percent or more of the soil by dry weight passes the #200 sieve, the soil is classified as fine-grained. If more than 50 percent of the soil by dry weight is retained on the #200 sieve, the soil is classified as coarse grained.

Coarse grained soils are described as follows:

Boulder:	Material retained on a 12-inch square sieve
Cobble:	Material passing a 12-inch sieve but retained on a 3-inch sieve
Gravel:	Material passing a 3-inch sieve but retained on a #4 sieve
Sand:	Material passing a #4 sieve but retained on a #200 sieve

Fine-grained materials are silts and clays. The liquid limit and plastic limit results from an Atterberg Limits test are used to determine if the soil is a silt or clay.

## VICINITY MAP



**REFERENCE:**  
USGS TOPOGRAPHIC MAP  
KOKOHEAD QUADRANGLE  
DATED 1999  
SCALE: 1"=2000'



Project: DRYSDALE RESIDENCE  
4 LUMAHAI STREET  
Project No.: 14-0123

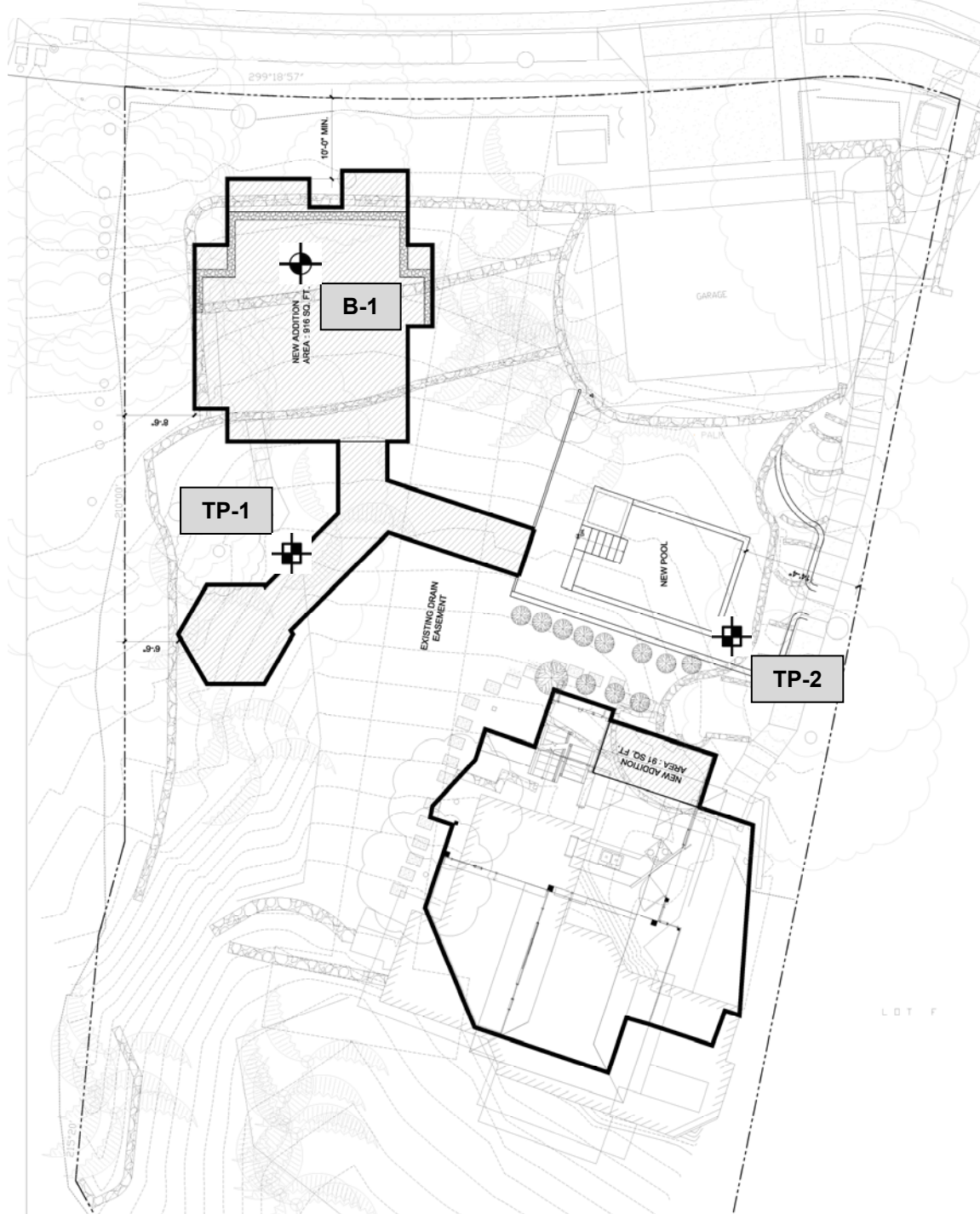
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**PLATE**  
**1**



TRUE NORTH

← LUMAHAI STREET →



**LEGEND:**



BORING LOCATION



TEST PIT LOCATION

**PLOT PLAN**

SCALE: 1" = 20'

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**PLATE**  
**2**

**LOG OF BORING NO. 1**

DRILLING METHOD: **Minuteman/Tripod**  
 HAMMER WEIGHT (lbs): **140**  
 HAMMER DROP (in): **30**

ELEVATION (FT.): **Unknown**  
 DEPTH OF BORING (FT.): **10**  
 DEPTH TO GROUNDWATER (FT.): **Unknown**  
 DATE DRILLED: **September 29, 2014**




DEPTH (FT.)	GRAPHIC SYMBOL	UNIFIED SOIL CLASSIFICATION	DESCRIPTION	SAMPLE	BLOWS/FOOT	COLOR	MOISTURE	CONSISTENCY	DRY DENSITY (PCF)	MOISTURE CONTENT (% OF DRY WT.)	PENETROMETER (TSF)	TORVANE STRENGTH (TSF)
0		<b>MH</b>	elastic SILT; with sand, few gravel			brown	moist	stiff				
1		<b>GM</b>	silty GRAVEL; with sand			gray light brown		medium dense				
2		<b>(TUF)</b>	TUFF;		23				75.4	16.0		
3								very dense				
4					63					16.3		
5												
6						gray orange brown		dense				
7					42					25.0		
8												
9						yellow brown						
10					44					26.2		
11			END OF BORING									
12												
13												
14												
15												

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**PLATE**  
**3**

**LOG OF TEST PIT NO. 1**EQUIPMENT USED: **Hand Equipment**  
DATE EXCAVATED: **September 29, 2014**ELEVATION: **Unknown**DEPTH OF TEST PIT (FT.): **4**DEPTH TO GROUNDWATER (FT.): **Unknown**

DEPTH (FT.)	GRAPHIC SYMBOL	UNIFIED SOIL CLASSIFICATION	DESCRIPTION	SAMPLE	COLOR	MOISTURE	CONSISTENCY	DRY DENSITY (PCF)	MOISTURE CONTENT (% OF DRY WT.)	PENETROMETER (TSF)	TORVANE STRENGTH (TSF)
0		<b>GM</b>	silty GRAVEL; some sand		gray brown	moist	medium dense				
1											
2		<b>(TUF)</b>	TUFF;		orange brown						
3											
4			END OF TEST PIT								
5											
6											
7											
8											
9											
10											
11											
12											
13											
14											
15											

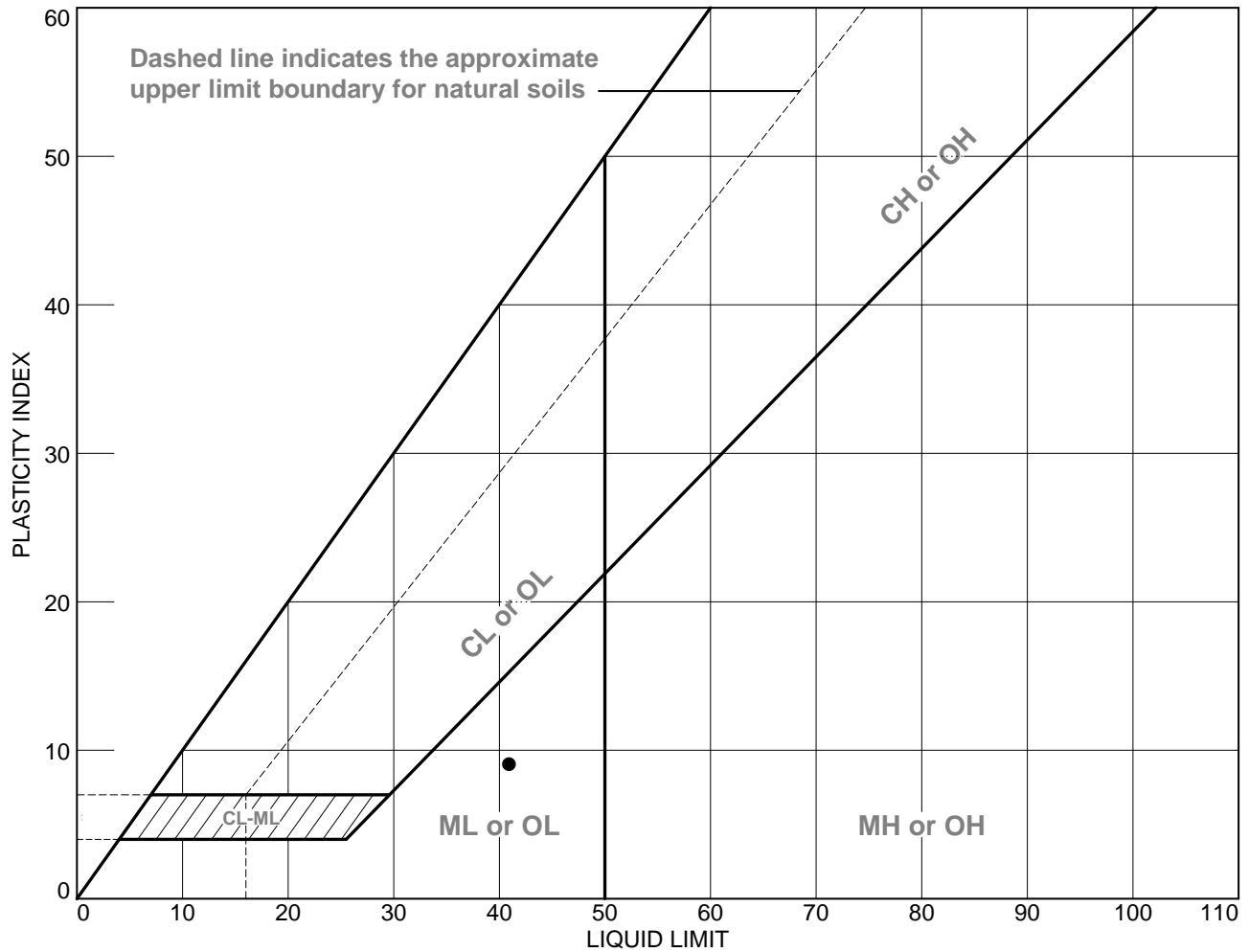
Project: **DRYSDALE RESIDENCE**  
**4 LUMAHAI STREET**  
Project No.: **14-0123****SHINSATO ENGINEERING, INC.**  
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**4**

**LOG OF TEST PIT NO. 2**EQUIPMENT USED: **Hand Equipment**  
DATE EXCAVATED: **September 29, 2014**ELEVATION: **Unknown**DEPTH OF TEST PIT (FT.): **1**DEPTH TO GROUNDWATER (FT.): **Unknown**

DEPTH (FT.)	GRAPHIC SYMBOL	UNIFIED SOIL CLASSIFICATION	DESCRIPTION	SAMPLE	COLOR	MOISTURE	CONSISTENCY	DRY DENSITY (PCF)	MOISTURE CONTENT (% OF DRY WT.)	PENETROMETER (TSF)	TORVANE STRENGTH (TSF)
0		<b>GM</b>	silty GRAVEL; with sand		light brown	moist	medium dense				
		<b>(TUF)</b>	TUFF;				dense				
1			END OF TEST PIT								
2											
3											
4											
5											
6											
7											
8											
9											
10											
11											
12											
13											
14											
15											

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**5**

# ATTERBERG LIMITS



## SOIL DATA

SYMBOL	SOURCE	SAMPLE NO.	DEPTH	NATURAL WATER CONTENT (%)	PLASTIC LIMIT (%)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	USCS
●	1	1	2	16.0	32	41	9	ML

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**Pearl City, HI**

**Client:**

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4 LUMAHAI STREET

**Project No.:** 14-0123

**Figure** 6